LINCOLN CONTINENTAL, MASERATI SUV TESTED

CAR AND DRIVER

FEB/2017

INDEPENDENCE. IRREVERENCE.

Raptor!

FORD'S 450-HP MEGA-TRUCK GETS AIR FOR DAYS

PLUS

HAS BMW REDEEMED THE 5-SERIES?

PLUG-IN PARTY: CHEVY VOLT VS. PRIUS PRIME

HOW TO TEST YOUR CAR LIKE THE PROS

CHEVY. THE MOST AWARDED CAR COMPANY TWO YEARS IN A ROW[1] JUST RAISED THE

THE 238-MILE[2] RANGE, ALL-ELECTRIC BOLT EV

MOTOR TREND'S 2017 CAR OF THE YEAR®

1 Based on recognized industry awards for 2014/2015 year-end totals. 2 EPA-estimated 238-mile EV range. Your actual range may vary based on several factors including temperature, terrain and driving technique. Limited availability late 2016 in select markets. U.S. News Best Cars: The 2016 Chevrolet Colorado, Impala and Traverse were named a Best Car for the Money, and the 2016 Impala and Malibu were named a Best Car for Families by U.S. News & World Report. View U.S. News Best Cars at usnews.com/cars. The Chevrolet Spark, Chevrolet Equinox (tie), and Chevrolet Silverado HD and LD received the lowest number of problems per 100 vehicles in their respective segments in the J.D. Power 2016 Initial Quality Study, based on 80,157 total responses, evaluating 245 models, and measures the opinions of new 2016 vehicle owners after 90 days of ownership, surveyed in February–May 2016. Your experiences may vary. Visit jdpower.com. Kelley Blue Book: Vehicle's projected resale value is specific to the 2016 model year. 2016 model-year vehicles' projected cost to own for the initial five-year ownership period is based on the average Kelley Blue Book 5-Year Cost to Own data, which considers depreciation and costs such as fuel and insurance. For more information, visit Kelley Blue Book's KBB.com. Kelley Blue Book is a registered trademark of Kelley Blue Book Co., Inc.

BAR HIGHER.

16 BEST Family Cars
"HIGHEST INITIAL QUALITY LARGE LIGHT DUTY PICKUP"
Autobytel® 2016 Sedan of the Year
2016 MALIBU
Parents + edmunds BEST FAMILY CARS 2015
KELLEY BLUE BOOK 2016 5-YEAR COST TO OWN AWARDS
BEST CARS U.S.News FOR THE MONEY 2016
10 BEST Green Cars
BEST 5 ALL-AROUND PERFORMANCE AUTOMOTIVE SCIENCE GROUP 2016
"HIGHEST INITIAL QUALITY COMPACT SUV (TIE)"
SILVERADO
BOLT EV
2017 MOTOR TREND CAR OF THE YEAR®

FIND NEW ROADS™

2017 MOTOR TREND CAR OF THE YEAR®

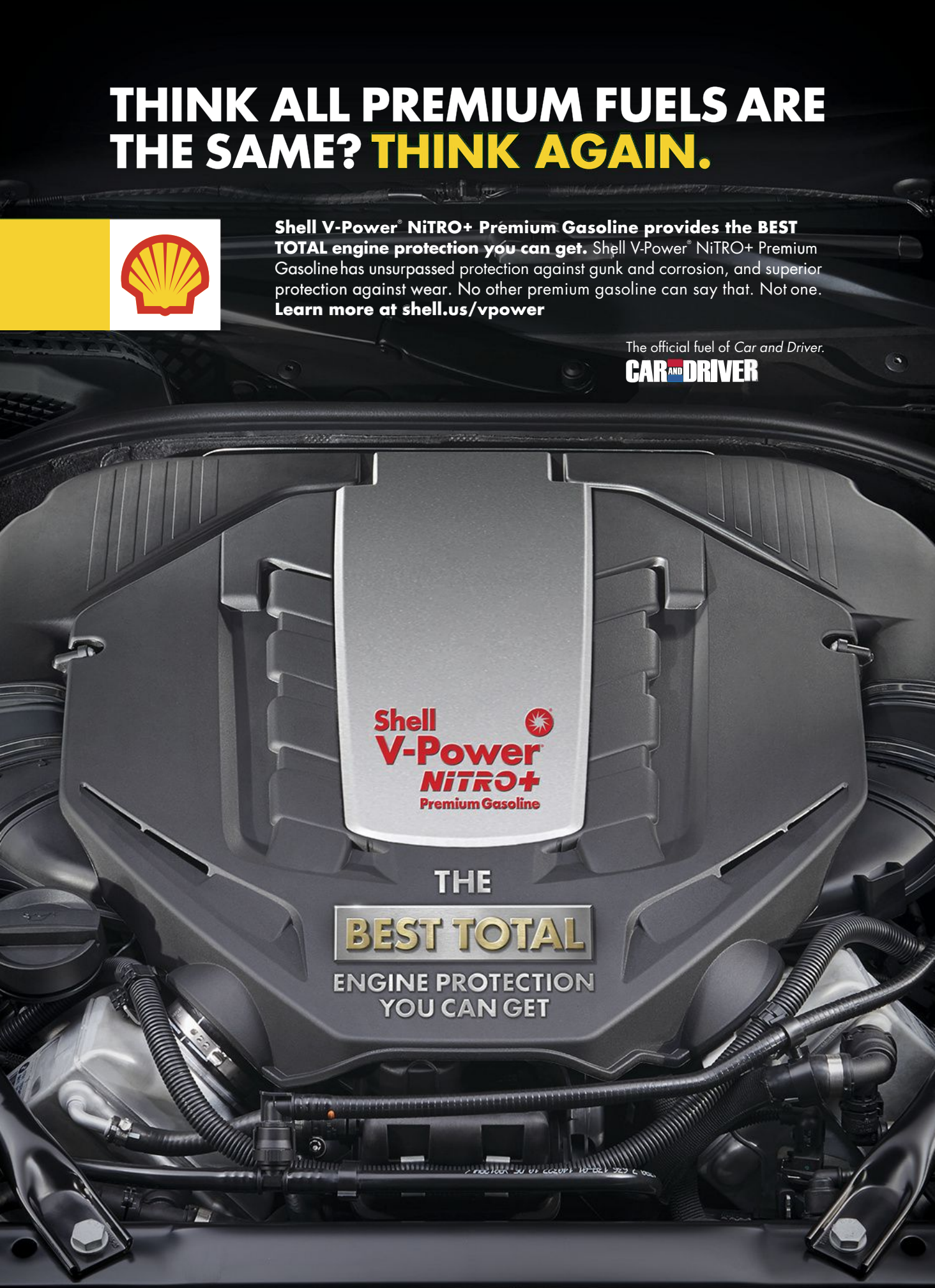
CHEVROLET

THINK ALL PREMIUM FUELS ARE THE SAME? THINK AGAIN.

Shell V-Power® NiTRO+ Premium Gasoline provides the BEST TOTAL engine protection you can get. Shell V-Power® NiTRO+ Premium Gasoline has unsurpassed protection against gunk and corrosion, and superior protection against wear. No other premium gasoline can say that. Not one. **Learn more at shell.us/vpower**

The official fuel of *Car and Driver.*

CAR AND DRIVER



Car and Driver. vol. 62, no. 8

In this Issue:

"In the desert, the Raptor is a leaping, bounding dust devil of inexhaustible energy and movement."

—DANIEL PUND, "MINT JELLY"

030

Features

030
Car Meets Road
2017 FORD F-150 RAPTOR SUPERCAB
We hammer the new Ford Raptor over the route of the old Mint 400 desert race.
by Daniel Pund

044
First Drive
2017 BMW 5-SERIES
Six years later, we drive the 5-series through coastal Portugal once again.
by Eric Tingwall

048
Comparison Test
TORTOISE AND THE HARE
2017 Chevrolet Volt Premier vs. 2017 Toyota Prius Prime Advanced.
by Tony Quiroga

060
Road Test
2017 MASERATI LEVANTE S Q4
With the Levante SUV, Maserati looks the Porsche Cayenne in the eye. And blinks.
by Josh Jacquot

066
Buffoonery!
NONSTANDARDIZED CAR TESTING
Do not attempt to test your own vehicle. Here's how.
by Jeff Sabatini

072
Road Test
2017 LINCOLN CONTINENTAL RESERVE 3.0T AWD
Lincoln's premier nameplate is tanned, rested, and ready for another go as the brand's flagship.
by Don Sherman

On the Cover

Might as well jump. This page: Post-jump compression test.
photography by Marc Urbano

Car and Driver.
vol. 62, no. 8

013

On the Web

—

2017 10BEST TRUCKS AND SUVS

Remember 5Best Trucks? This is like that, only with twice the number and many times more contenders from every truck, crossover, and SUV segment.

—

CarandDriver.com/201710BestTrucksandSUVs

Departments

Columnists

008 . EDDIE ALTERMAN
Carmakers would like relief from CAFE mandates, bigly.

024 . JOHN PHILLIPS
A Shelby Mustang and the joy of aimlessness.

026 . AARON ROBINSON
Propel your car with explosions? Preposterous!

028 . EZRA DYER
Tire advice from a man who sometimes forgets to breathe.

—

Upfront

013 . *Reveal of the Month*
ALFA ROMEO STELVIO
Hunting for crossover sales.

018 . A BETTER BATTERY
A survey of what might come after lithium-ion.

020 . *The Social History of . . .*
THE VOLVO WAGON
How did station wagons come to define this Swedish carmaker?

022 . SPARE CHANGE
How much does a space-saver spare tire really impact a car's performance?

—

Drivelines

078 . 2017 ALFA ROMEO GIULIA
Refusing to live in the Quadrifoglio's shadow is what the 2.0-liter Giulia does best.

082 . *Tested*
2017 KIA SOUL TURBO . More performance and better value, same great Soul.

084 . *Tested*
2017 MERCEDES-AMG GLC43
Landing a solid punch with the new-for-2017 crossover.

086 . 2017 HONDA CIVIC HATCHBACK . Honda gets its ducts in a row with this hatchback.

090 . *Tested*
2017 PORSCHE 911 TURBO
Even in base trim, the new 911 Turbo is stupid fast.

—

Etc.

007 . BACKFIRES
Standing in a raging river and shouting at it to reverse course.

092 . WHAT I'D DO DIFFERENTLY
A.J. Foyt.

YOU'RE MEETING HER DAD.

AND ALL HIS WAR MEDALS.

GET YOUR EDGE®

He's going to remember your face, one way or another.

Our lubricating molecules enhance razor glide for a smooth shave with less irritation.

©2016 Edgewell.

The deeper the snow, the better the story.

Introducing the all-new 2017 Subaru Impreza. Available in sedan and 5-door body styles. With road-gripping standard Symmetrical All-Wheel Drive, up to 38 mpg,* and available EyeSight® Driver Assist Technology,† it's up for any adventure. More than a car, it's a Subaru. **Love. It's what makes a Subaru, a Subaru.**

SUBARU

Confidence in Motion

Impreza. Well-equipped at $18,395.**

Subaru, Impreza, and EyeSight are registered trademarks. *EPA-estimated hwy fuel economy for 2017 Subaru Impreza CVT non-Sport sedan models. 2017 Subaru Impreza CVT non-Sport 5-door shown is rated at 37 mpg hwy. Actual mileage may vary. †EyeSight is a driver assist system that may not operate optimally under all driving conditions. The driver is always responsible for safe and attentive driving. System effectiveness depends on many factors such as vehicle maintenance, weather, and road conditions. See Owner's Manual for complete details on system operation and limitations. Please remember to turn off EyeSight when going through a car wash. **MSRP excludes destination and delivery charges, tax, title, and registration fees. Retailer sets actual price. Certain equipment may be required in specific states, which can modify your MSRP. See your retailer for details. 2017 Subaru Impreza 2.0i Limited 5-door shown has an MSRP of $27,090. Vehicle shown with available accessories.

Backfires:
The joyful noise of the commentariat, rebutted sporadically by Ed.

UTILITY CHARGES

It is both sad and amusing to see how the American public's appetite has grown for fancy SUVs and crossovers. I understand you have to publish articles covering the better examples of these vehicles for the benefit of some of your readers, but personally, I've been into stealthy, high-performance cars that handle. One example has succeeded spectacularly for its intended purpose here in sunny Southern California. It's my steel-metallic-blue 2002 BMW 325i Sport Wagon. Everything you've ever said praising E46 BMWs is right on the money.

—Cleveland E. Norton Jr.
San Diego, CA

Not in my magazine! The November cover is an abomination. "Best Crossovers and SUVs"? Really? This magazine is supposed to be my one escape from reality. Ordinarily, I can lose myself in its pages and pretend I do not live in a world where consumers are inexplicably smitten by these cars on stilts. Thanks for ruining the illusion.

—Trevor Pontifex
Claremont, CA

I get it. The U.S. is going wild for crossovers and SUVs. However, there are people who couldn't care less about these tall station wagons. 23 pages (actually 25, when you add in the Nissan Armada review) of wasted magazine space. With all the advertisements, there were precious few pages devoted to cars. Please don't do that again. I finished anything of interest in one "s%itting."

—Gary Johnson
Round Rock, TX

Writing this letter is just about the most presidential thing you've done, Mr. Johnson—Ed.

"Best Crossovers and SUVs"? That title must have barely edged out the more accurate "Bloated 4-Wheeled Toothaches and Hemorrhoids." Keep one for 10 years, then open the garage door and see if you still get a thrill from this . . . thing.

Time to change the magazine title to *Dispiriting Lump and Person Occupying the Left-Front Seat.*

—Walter Koch
Earlysville, VA

ACURA NSX AND THE THRILL OF THE ELECTRIC
CAR AND DRIVER
Best Crossovers and SUVs
STYLE, SPEED, AND SPACE:
PORSCHE MACAN GTS VS. JAGUAR F-PACE
Our guide to the sport-utes that won't heap shame upon your house
LONG-TERM TEST// VOLKSWAGEN GTI: THE CAR WE'D ALL BUY FOR OURSELVES
PLUS// BENTLEY BENTAYGA VS. RANGE ROVER SVAUTOBIOGRAPHY DRIVEN// GENESIS G90, LOTUS EVORA 400, PORSCHE 911

"TIME TO CHANGE THE MAGAZINE TITLE TO *DISPIRITING LUMP AND THE PERSON OCCUPYING THE LEFT-FRONT SEAT.*"

Your November SUV issue included a guide to sport-utes that won't heap shame upon your house. That implies that there are sport-utes out there that would heap shame upon your house. Please provide a list before I heap shame upon my house.

—Scott Poley
Elmira, NY

PACING PORSCHE

Re: November 2016 issue and the Jaguar F-Pace/Porsche Macan test ["Lights In the Darkness"]. Years ago, I attended an automotive design forum where one of the speakers was Ian Callum, Jaguar design director. When asked if Jaguar was going to do an SUV, he replied: "A Jaguar looks like it's moving, even when it's standing still. An SUV looks like it's standing still, even when it's moving. You have your answer." So much for that.

—Conrad Zumhagen
Ann Arbor, MI

"In an industry that lives and dies by the sales of Camrys and pickup trucks, advocating for enthusiasts sometimes feels like standing in a raging river and shouting at

it to reverse course."

Well said, Mr. Gall. I don't believe a more accurate description has ever been given—about anything.

—Sven E.
Toronto, ON

Seeing the "dueling keyboards" on the Porsche Macan GTS's center console left me wondering how the company known for brilliantly designed interiors could draw inspiration from the Atari Jaguar controller. But after much consideration, I've realized it's an attempt to trigger lust for all those expensive options. One look at those blank button spaces will drive the obsessive-compulsive types to empty their nest eggs.

—Chad Spiegel
Grayslake, IL

Note to self: Google Atari Jaguar controller—Ed.

I don't doubt that the Porsche Macan is better than the Jaguar F-Pace, but how did it score 18 out of 20 points for "As-Tested Price"? First, why do you need a 20-point scale when 5 would suffice? Second, in what universe is any Porsche a value, much less the one implied by your score? You trashed Porsche for charging $525 for a color-coordinated key and then let it slide with your score. I'd love to own a Porsche, especially a Macan, but I know when I'm being gouged. Porsche maintains its crown as the most profitable car company in the world by charging ridiculous, how-do-you-keep-a-straight-face amounts for extras, and you enable it by playing along. At every opportunity you need to shame Porsche and reward its competition for having well-equipped base vehicles. Price is a major factor in a car-buying decision for most of us, and comparisons should reflect that.

—Patrick Fort
Eagle River, AK

We use 20 points to give the price more weight because, as you say, "price is a major factor in a car-buying decision." That objective score is based on a vehicle's as-tested price as a percentage of the cheapest price in the

"WELL SAID, MR. GALL. I DON'T BELIEVE A MORE ACCURATE DESCRIPTION HAS EVER BEEN GIVEN —ABOUT ANYTHING."

▼

LIGHTS IN THE DARKNESS
Jaguar and Porsche prove that an elevated center of gravity and a mainstream mission need not preclude a serious sense of fun.
by Jared Gall
photography by Greg Pajo

Editor's Letter:

We tried to stay above the fray this election cycle. I have rejected, for example, several politically charged story proposals this year, ranging from gold-plating an '80s limo to road-testing a Subaru in northern Libya. But there is one intersection where cars and politics must collide, and it is at the corner of Energy and Policy.

Already, the Detroit Three have been lobbying the incoming administration to take their industry off the path to the 2025 CAFE regulations. These regs, you'll remember, mandate a 54.5-mpg average for an automaker's fleet, but the workarounds are already legion. Knowing the new guy's pro-business proclivities—he's good at business!—it seems certain that the previous administration's CAFE plan won't survive.

What does that mean for cars and light trucks going forward? One facile prediction: After years of engine downsizing, upsizing is going to be a thing.

The V-8 may reemerge as the engine of choice for sports sedans, sports cars, and trucks, and the EVs' march could stall. The market penetration for pure EVs is barely half a percent now, and that's with Tesla factored in and California's thumb on the scale. For EVs to break through, they will need to be legitimately desirable, à la the Model S or Jaguar's forthcoming I-Pace crossover. Their benefits will have to outweigh the convenience and familiarity of the internal-combustion engine.

But the conditions that got us to the point where EVs are actually lustworthy are a result of the research undertaken when we were said to be at peak oil and electrification was the most plausible way forward. If car- and battery makers ease off EV R&D now, batteries may never fully pencil against IC engines and desirable electrics at all price points may never materialize. California and the nine other ZEV states will mandate alt-fuelers, and the rest of the country will drive what it wants.

Barring government intervention or spiking fuel prices, we have shown that we will gravitate to the biggest, safest vehicles available. The American road of the future could look very much like that of the past. The joy that would bring to many of us enthusiasts is tempered by the cessation of big, exciting technological leaps. Back to the future, indeed.

—Eddie Alterman

test. The Porsche, at 9 percent more expensive than the Jaguar, earns 10 percent fewer points. An objective 5-point scale would give the Jag and Porsche 5 points each, increasing the Macan's margin of victory. One upside to Porsche's a la carte pricing is that you don't have to buy a $525 painted key if you think it's a raw deal. Stand-alone options mean you can configure the vehicle exactly as you want it—Ed.

In your November review of the Jaguar F-Pace, you state that the vehicle has an "achingly beautiful profile." This is rubbish; it is merely another jacked-up station wagon. The following cars have "achingly beautiful profiles": 1965 Ferrari 275GTB coupe, 1962 Jaguar XKE convertible, and 1953 Studebaker Starlight hardtop.

—Keith Thorne
Alexandria, VA

In the November 2016 issue, I noticed that your writers are opening up about their feelings and insecurities. Apparently, the Jaguar F-Pace's brake feel, Acura NSX's suspension tuning, and the overboosted steering in the Nissan Armada all "sap confidence." Anything else you want to share before our hour is up?

—Matt F.
Canton, MI

I have this recurring dream where everyone calls the F-Pace the P-Face. What's that about?—Ed.

HISTORY SEARCH

I was a little miffed by the absence of the Mitsubishi Outlander from "On the Origin of the SUV Species" [November 2016]. Granted, the Outlander was built on a subcompact (Lancer) platform and follows a long lineage of "cute utes" from its fellow Japanese competitors. However, two huge factors make the Outlander unique: 1) much of the Lancer Evolution guts are there, and 2) it remains one of the few products a now-crippled Mitsubishi still sells in the U.S. Mitsubishi's brief rise to power during the early 2000s was more than cheap financing—it actually had some respectable vehicles, and the Outlander remains one of them.

—Chris Filippi
Encinitas, CA

In the time you spent crafting your letter, you could've gone to Karina's Taco Shop and ordered their carnitas burrito. It's so good, you'll forget all about Mitsubishi Outlanders—Ed.

Where is my Hummer H3 in "On the Origin of the SUV Species"? You list the others, the H1 and H2. You also included the *Breaking Bad* Pontiac Aztek, another great collectible. My '09 is a gem and just turned 88,000.

—Peter Young
Weymouth, MA

Where's the International Scout that came out in the early '60s? Was it not considered an SUV?

—Evans Marbrey
Toney, AL

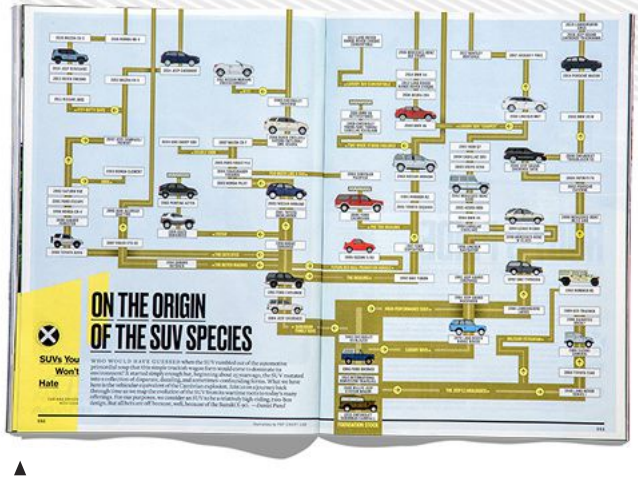
I didn't have a lot of time to read "On the Origin of the SUV Species" article [*What a great way to start a letter—Ed.*]. But I think you forgot something. Subaru may have claimed that it had the first sport-utility wagon. But that wasn't true. The forgotten line of SUVs was the American Motors Eagle and Spirit of the '70s and '80s.

—Kevin Fogg
Hartford, CT

I am sick and tired of your publication, and others, repeatedly showing the 1984 Jeep Cherokee as the originator of the '80s surge in popularity of the SUV. The 1983 Chevy S-10 Blazer (and GMC Jimmy) was a year ahead of the Cherokee and was nicer, too. By the time the Cherokee hit the showroom, there were already more than 106,000 S-10 Blazers on the road. Yes, the S-10 Blazer had only two doors in '83, but my family loved it and didn't mind climbing into the back seat. You also list under "foundation stock" the two-door Ford Bronco and the two-door K5 Blazer. Therefore, I assume you are not limiting the definition of SUV to four-doors.

—Vaughn May
Foothill Ranch, CA

The Cherokee's unibody construction and available four-door hatch configuration gave it the nod over the early S-10 Blazer and Jimmy—Ed.



▲

"SUBARU MAY HAVE CLAIMED THAT IT HAD THE FIRST SPORT-UTILITY WAGON. BUT THE FORGOTTEN LINE OF SUVS WAS THE AMERICAN MOTORS EAGLE AND SPIRIT OF THE '70S AND '80S."

Love the SUV family tree. Disappointed in the lack of some weird Laforza branch.

—Ryan Huber
Cincinnati, OH

AUDI EROTICISM

In the November review of the 2017 Audi SQ7 ["Rudy's Pride"], this sentence is one of the sexiest things I've ever read: "The 4.0-liter V-8 features sequential turbochargers, each fed gas from a separate exhaust tract, with the second turbo brought onboard when cam lobes slide laterally on the camshaft to engage the corresponding valves." On top of the brilliance of Mike Duff's prose, the article had me wondering if Mr. Duff had made his way to *C/D* after a stint of scribbling for *Penthouse Forum*.

—Roland Vargish
Colorado Springs, CO

We had to cut Duff's description of the Audi's tailpipe emissions because we are a family magazine—Ed.

JEEPERS

I enjoyed Jared Gall's love letter to his Jeep Wrangler Unlimited in the November issue ["Ask the Man Who Owns One"]. I admire his resolve in staying with the manual. That agricultural Jeep six-speed manual, Jeep's vague off-idle throttle calibration, an equally vague clutch, and the gutless bottom-end of the 3.6-liter V-6 will test any driver's commitment to saving the manuals. Choosing the 3.73 rear-end ratio makes things better. We're on our third Wrangler now, and it's an only car. Life is great.

—Mac Miller
Lincoln City, OR

COLLECT CALL

Concerning your November article, "Sport-Utility Vintage," I believe you missed a good candidate. I'm talking about the '89 Isuzu Trooper RS model. Less than 2000 of these short-wheelbase models were imported, and the '89 is the only generation-one RS produced. Isuzu did produce a generation-two RS model in 1993–95. I'll enclose a picture of mine so you can see one. They only came in black, red, and white, and they're already collectible.

—Harry Bomberger
Lewisville, TX

MO' MONEY, MO' PROBLEMS

Excuse me, but doesn't the term SUV have the word "utility" in it? What is utilitarian or practical about a $200,000 SUV ["The Upper Crust," November 2016]? Take that money and

buy an Audi Q7 or a Porsche Macan *and* a Porsche Boxster *and* a nice motorcycle. Now that makes some sense in a totally insane universe. But first you need to spend $5 million on a nice mansion with at least a five-car garage.

—Richard Vaught
New Market, VA

FROM THE IP

I pulled up at a traffic light behind a Hyundai Genesis sedan ["... to Revelation," November 2016], one whose exterior resembled that of a Mercedes-Benz E-class. The badge read "Genesis 4.6." As a pastor, I was curious as to what Genesis 4:6 says: "Then the Lord said to Cain, 'Why are you angry? Why is your face downcast?' " Cain must have been upset that he had a counterfeit, rather than a real Mercedes.

—John Kay
Greenville, TX

That's really the least of Cain's problems—Ed.

LONG-TERM AFFAIR

With my recent purchase of a 2016 Ford Fiesta ST, Jared Gall's comment, "you screwed up," in your long-term Volkswagen GTI story in the November issue caught my eye. This was the same day I received the latest *Consumer Reports* rating the Fiesta as having the worst reliability in class. I had to laugh. I considered the GTI. However, VW's corporate ethics, the car's wheels, higher price, and particularly the nearly 400-pound weight difference just didn't do it for me. I do like the plaid seats, its excellent reviews, and the quality of German vehicles, but not their ownership costs so much. And the Fiesta ST's Recaro seats, reviews, driving comparisons, and overall economy spoke to me more. And I've got to ask about "putting the best tires in the rear to avoid the risk of uncontrollable oversteer." That had to be a joke, right?

—Tim C. King
Reno, NV

When replacing two worn tires, putting the new tires on the rear axle increases the chances that, in wet conditions, the front end will slide first, which is much safer than the oversteer that is likely to occur if the rear end hydroplanes first—Ed.

Dude, 911 the *Property Brothers.* Y'all live in some ugly cribs.

—Myron Slade
Buckhead, GA

But 911s are why we live in such crappy houses—Ed.

APOSTROPHE APOTHEOSIS

I would think that when your job is writing, editing, and printing that you guys would at least know basic English rules. There is no such thing as "s's." I'm referring to your latest edition where the writer spells "Lotus'" as "Lotus's." Really, you guys?!

—Dianna Campbell
Lakewood, CA

No such thing? Our copy chief recommends that you check out* The Chicago Manual of Style, *7.15. She also apologizes for not coming up with a wittier answer—Ed.

MOVE THIS

With disgust, I read "Paradigm Shift" on page 106 of the

Long-Term Test: When the tires get worn and the factory warranty runs out, that's where we come in. *Car and Driver* is your source for the 40,000-mile evaluation.

2015 VOLKSWAGEN GTI

Arrival: Feb/2015
Departure: Jul/2016

Using Shell V-Power® NiTRO® + Premium Gasolines and diesel fuels appropriately in all *Car and Driver* test vehicles ensures the consistency and integrity of our instrumented testing procedures and numbers, both in the magazine and online.

Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

Please Recycle This Magazine

CUSTOMER SERVICE
Visit service.caranddriver.com or write to Customer Service Department, Car and Driver, P.O. Box 37870, Boone, Iowa 50037 for inquiries/requests, changes of mailing and email addresses, subscription orders, payments, etc.

PERMISSIONS Material in this publication may not be reproduced in any form without permission.
REPRINTS For information on reprints and e-prints, please contact Brian Kolb at **Wright's Reprints,** 877-652-5295 or bkolb@wrightsreprints.com. To order digital back issues, go to your favorite app store. *Car and Driver* © is a registered trademark of Hearst Communications, Inc. Copyright 2017, Hearst Communications, Inc. All rights reserved.

Editor-In-Chief
Eddie Alterman

Deputy Editor
Daniel Pund
Creative Director
Darin Johnson
Executive Editor
Aaron Robinson
Technical Director
Eric Tingwall
Managing Editor
Mike Fazioli
Design Director
Nathan Schroeder
Features Editor
Jeff Sabatini
Senior Editors
Tony Quiroga, Jared Gall
Reviews Editor
Josh Jacquot
Associate Managing Editor
Juli Burke
Copy Chief
Carolyn Pavia-Rauchman
Assistant Technical Editor
David Beard
Road-Test Editor C. Benn
Copy Editor
Jennifer Harrington
Editor, Montana Desk
John Phillips
European Editor Mike Duff
Carolinas Editor Ezra Dyer
Staff Photographer
Marc Urbano
Art Assistant
Austin Irwin
Office and Invoice Manager
Susan Mathews
Road Warriors Zeb Sadiq, Maxwell B. Mortimer, Nathan Petroelje, Charles Dryer

Contributing Editors
Clifford Atiyeh, Csaba Csere, Fred M.H. Gregory, John Pearley Huffman, Davey G. Johnson, Peter Manso, Bruce McCall, P.J. O'Rourke, Steve Siler, Tony Swan, James Tate, Dweezil Zappa

Deputy Online Editor
Dave VanderWerp
Executive Online Editor
Erik Johnson
Testing Director Don Sherman
Senior Online Editors
Joe Lorio, Mike Sutton, Kevin A. Wilson
Technology and Mobility Editor
Pete Bigelow
Environmental Editor
Bengt Halvorson
Managing Online Editor
Scott Mosher
Senior Technical Editor
K.C. Colwell
Buyer's Guide Editor
Kirk Seaman
Buyer's Guide Managing Editor
Jennifer Misaros
Online Editors Alexander Stoklosa, Andrew Wendler
Buyer's Guide Assistant Editors
Drew Dorian, Joe Grove, Eric Stafford, Annie White
Associate Online Editors
Joseph Capparella, Greg Fink, Tony Markovich
Online Copy Chief
Rusty Blackwell
Online Copy Editors
Laura Sky Brown, Farah Harajli
Online Staff Photographers
Alex Conley, Michael Simari
Online Production Manager
Luke Sellenraad
Assistant Online Production Manager Brendan Tracey
Buyer's Guide Production Assistant Cory Wolfe
Online Production Designers
Sarah Larson, Jeff Xu
Online Production Assistants
Daniel Golson, Daniel Wilson
Photo Assistant Charley M. Ladd
Product Director Mark Quint
Interactive Design Director
Sam Conant

Editorial Office
1585 Eisenhower Place
Ann Arbor, Michigan 48108

Printed in the U.S.A.

Editorial Contributions
Unsolicited artwork and manuscripts are not accepted, and publisher assumes no responsibility for return or safety of unsolicited artwork, photographs, or manuscripts. Query letters may be addressed to the deputy editor.

Publisher and Chief Revenue Officer
Felix DiFilippo

National Advertising Director
Cameron Aibergo
General Manager, Hearst Men's Group
Samantha Irwin
Executive Director, Digital Advertising Sales
Deirdre Daly-Markowski

NEW YORK
Account Manager
Jeanette Silverstein
East Coast Digital Sales Managers
Brett Fickier, Mia S. Klein
CHICAGO
Integrated Sales Director
Rick Bisbee
Integrated Midwest Manager
Marc Gordon
Assistant Yvonne Villareal
DETROIT
Integrated Sales Director
Mark Fikany
Midwest Account Manager
Bryce Vredevoogd
Assistant Toni Starrs
LOS ANGELES
Integrated Sales Director
Anne Rethmeyer
Integration Associate
Michelle Nelson
Assistant Richard Panciocco
SAN FRANCISCO
Mediacentric, Inc.
Steve Thompson, William G. Smith
DALLAS
PR 4.0 Media Patty Rudolph

HEARST DIRECT MEDIA
Sales Manager
Brad Gettelfinger
Account Manager
John Stankewitz

MARKETING SOLUTIONS
Associate Publisher and Group Marketing Director
Jill Meenaghan
Executive Director, Integrated Marketing
Dawn Sheggeby
Executive Creative Director, Group Marketing
Jana Nesbitt Gale
Associate Marketing Director
Amanda Luginbill
Marketing Manager
Michael Coopersmith
Art Directors, Group Marketing
Elena Martorano, Michael Sarpy
Marketing Coordinator
Vincent Carbone
Group Digital Marketing Director
Kelley Gudahl
Digital Marketing Manager
Angelique Tyree
Research Manager
Peter Davis

THE BLEND LINE
Executive Creative Director
Maury Postal

ADMINISTRATION
Advertising Services Director
Regina Wall
Advertising Services & Accolades Manager Rebecca Taroon

PRODUCTION
Production/Operations Director
Chuck Lodato
Operations Account Manager
Elizabeth Cascone
Premedia Account Manager
Zachary Smith

CIRCULATION
Consumer Marketing Director
William Carter

HEARST MEN'S GROUP
Senior Vice President and Group Publishing Director
Jack Essig
Executive Assistant to the Group Publishing Director & Business Coordinator Mary Jane Boscia

Published by Hearst Communications, Inc.
300 W. 57th Street
New York, New York 10019

President & Chief Executive Officer
Steven R. Swartz
Chairman
William R. Hearst III
Executive Vice Chairman
Frank A. Bennack, Jr.
Secretary
Catherine A. Bostron
Treasurer Carlton Charles

HEARST MAGAZINES DIVISION
President
David Carey
President, Marketing & Publishing Director
Michael A. Clinton
President, Digital Media
Troy Young
Chief Content Officer
Joanna Coles
Senior Vice President, Chief Financial Officer
Debi Chirichella
Publishing Consultants
Gilbert C. Maurer, Mark F. Miller

INTERNATIONAL EDITIONS
Great Britain, Kazakhstan, Philippines, Russia, South Africa

HEARST AUTOS
President Nick Matarazzo

November issue. This, after grudgingly accepting that I must operate a similarly stupid shifter in my wife's late-model BMW 3-series. I find the new shifters irritating and potentially dangerous. It took a while to adjust to being in reverse when I thought I was in park. Now I make sure to read the display on the shifter AND the dash—just to make sure.

Can you tell us why manufacturers need to change what has been the accepted convention for decades of automatic-transmission shifting? PRNDL has worked just fine for a long time. Is there a good reason for the change?

—Clint Connell
Austin, TX

Nope—Ed.

SIX EDUCATION

In your Acura NSX test ["The Prophet," November 2016], you indicate that a 75-degree angle results in a narrower engine than a 90-degree V-6. That I understand. You also stated that the 75-degree angle results in a shorter crankshaft than a (balanced) 60-degree design. I would think that the length of the crankshaft is more determined by the bore and spacing of the cylinders than the V angle. Could you elaborate on this?

—Dave Foote
Prescott, AZ

[See "Explained."]

CHAOS THEORIES

While reading John Phillips's November column about Hans Monderman and his ideas about traffic control, I remembered an article about another view on the subject from many years ago titled "Safety Through Danger?" by Glenn Reynolds in a widely read mechanics magazine. It describes a phenomenon called the "Peltzman Effect." His view is that when conditions are made safer, drivers become less attentive and less safe. At least that is what I remember. I would like to have traffic control fall somewhere in the middle of chaos and rigid control.

—Martin Lennox
Kingston, NY

John Phillips posed an interesting point when he hypothesized that "unsafe is safe" in his column on taking away some modern objects used in the name of safety. If football players no longer wore helmets, they would likely not launch their bodies with reckless abandon like heat-seeking missiles during tackles, thus reducing head and neck trauma and brain damage. Phillips's musings are always excellent philosophical escapes.

—M. Zulauf
Warrensburg, MO

PLUGGED UP

Regarding Ezra Dyer's column about charging EVs in the November issue ["Guilty as charged"]: He suggests that the guy who needs to charge his EV just disconnect the cable from the car being charged and connect it to his. Is there any way to determine the state of an EV's charge from outside the vehicle?

Let's say you leave your car charging and an hour or so later, somebody else, thinking that yours is done charging, unplugs it to charge theirs. Later you return, expecting your car to be fully charged and ready for a long drive, only to find that you don't have enough juice to make it. Here in Texas somebody's likely to get shot over this deal.

—Bill Lins
Wharton, TX

Most BEVs illuminate small lights either on the dashboard or surrounding the charge port when the vehicle is charging. Those lights indicate when the battery is fully charged, but it takes knowledge of the car to interpret the lights, which sounds like a lot to expect of other EV owners—Ed.

If it snows in Southie and I shovel out the spot in front of the charging station, can I keep the spot until the snow melts? If so, what should I use to reserve the spot while I'm not there? Traffic cone? Walker? Old toilet?

—Joe Berkeley
South of Boston, MA

An ice sculpture of Whitey Bulger should work—Ed.

LAST WORDS

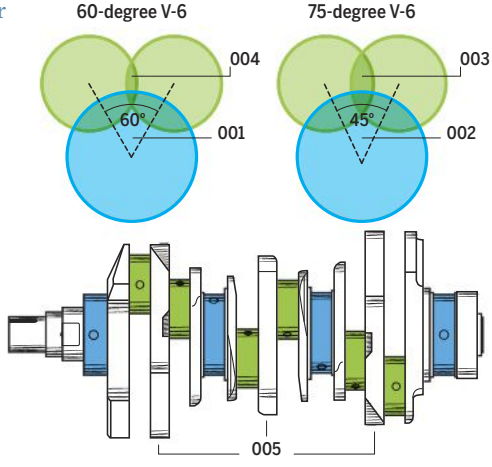
Car lives matter.

—Nick Heishman
Harrisonburg, VA

Ed. You're [*sic*] letters are now as long and boring as your articles.

—Jack Williams
Tucson, AZ

Explained: V-6 Bank Angle, Bank Offset, and Crankshaft Strength



The angle between cylinder banks determines the placement of the connecting-rod journals to achieve even firing every 120 degrees of crankshaft rotation. In a 60-degree V-6, the journals for the two cylinders opposite each other are located 60 degrees apart [001]. With a 75-degree bank angle, those same journals use 45-degree spacing [002], a number determined by subtracting 75 degrees from 120 degrees. The additional journal-to-journal overlap created by the 45-degree spacing results in more overlap between the journals [003] and thus a stronger crankshaft.

To compensate for the small overlap in the 60-degree V-6 [004], engineers can enlarge the journals or stretch the offset between the two cylinder banks to increase the thickness of the counterweight [005] that connects adjacent journals. Acura claims that increasing the offset is the preferred method, because each additional millimeter of thickness in the counterweight is about twice as effective at increasing strength as growing the journal diameter by a similar amount. For that reason, achieving the same crankshaft strength with a 60-degree V-6 would require a longer crank. *—Eric Tingwall*

Letter of the Month:

Ezra, you're a great writer, one of my favorite automotive journalists. However even the great ones can have an off day, I suppose. Your article on charging stations and etiquette of said charging stations [November 2016] made me want to get up on my roof, tie a fishing line around my testicles, tie the other end to a branch, and jump off the roof.

—William Peterson, Garland, TX

CRANKSHAFT ILLUSTRATION BY PETE SUCHESKI

ADVERTISEMENT

The Esquire Manhattan
is made with superior Jefferson's bourbon and a combination of the finest sweet and dry vermouth and bitters. Crafted with the editors of Esquire and barrel-aged for 90 days, the result is a damn good cocktail. Serve it up or on the rocks. No labor or equipment needed.

AVAILABLE AT FINE LIQUOR STORES NATIONWIDE

Reveal of the Month

TWISTY SISTER

ALFA ROMEO HUNTS FOR SALES WITH—WHAT ELSE?—A CROSSOVER. THIS ONE'S NAME IS AWFULLY AMBITIOUS, THOUGH. ***by Jared Gall***

THE NOTION OF SEMI-AFFORDABLE Italian cars hasn't exactly gained the traction of, say, a Sotheby's noodle-craft auction. Fiat 500 sales have been bending toward free-fall since that motorized espresso shot first appeared in 2011. And Alfa Romeo's mid-engined 4C sells in exotic volumes befitting its exotic looks, but it's hardly competitive with similarly priced toys. The Giulia will eventually boost Alfa's sales here by giving the brand a mainstream-ish product, but repeated delays mean deliveries won't start until about the time you read this.

The things that aren't tough to sell right now are crossovers. They account for a third of the market, and everybody's getting on board, including Maserati. [To see if that's a good idea or not, turn to our road test of the Levante, page 060.] Hoping to add a comma to its U.S. sales volume (and bolster it elsewhere in the world as well), Alfa Romeo is rolling out its first-ever crossover, the Stelvio.

001
Alfa's clover dates to 1923, when factory driver Ugo Sivocci painted one on his Targa Florio racer and won, breaking an unlucky streak. Months later, while testing a car without the clover, he crashed and died. It has adorned Alfa race cars ever since.

▼ CHASSIS

Named for the famous Italian mountain pass that is the best driving road we've ever clogged with a tractor [see "Enraging Bull," October 2014], the Stelvio shares its platform with the Giulia. It uses aluminum for the brake calipers, doors, fenders, front shock towers, and front and rear subframes. The control-arm front and multilink rear suspension assemblies also use the stuff. For further weight savings, parts of the rear crossmember are molded from composites. Using similar construction, the Giulia undercuts many of its competitors at the scales; we expect the Stelvio to do the same.

photography by MARC URBANO

001
THE HOOD VENTS ARE EXCLUSIVE QUADRIFOGLIO KIT. EXPECT A TONED-DOWN FASCIA ON LESSER STELVIOS, TOO.

002
ALFA WILL OFFER THE STELVIO IN 13 PAINT COLORS, WITH SEVEN WHEELS RANGING FROM 18 TO 21 INCHES. BREMBO CARBON-CERAMIC BRAKES ARE AN OPTION ON THE QUADRIFOGLIO.

003
THE ALCANTARA AND CARBON-FIBER ACCENTS AND RED CONTRAST STITCHING IDENTIFY THIS STELVIO AS A QUADRIFOGLIO. THE MID-LEVEL TI WILL HAVE WOOD IN PLACE OF CARBON FIBER.

There will be three trim levels: the basic Stelvio, the Ti, and the Quadrifoglio. Idiomatic Italian for "four-leaf clover," the Quadrifoglio has denoted the top performers in Alfa model lines since the '60s. Adaptive dampers are optional on the Ti and standard on the Quadrifoglio, which also receives a torque-vectoring rear differential as standard equipment.

▼ POWERTRAIN

This is where the Stelvio gets really interesting. The base model and the Ti share a direct-injected 2.0-liter four-cylinder with an aluminum block and head. A twin-scroll turbocharger and an intercooler help it generate 280 horsepower at 5200 rpm and 306 pound-feet of torque from 2250 to 4500. Fiat's fuel-saving MultiAir system gets employed here, ditching the throttle plate in favor of variable intake-valve timing and lift, which cuts pumping losses.

In the Quadrifoglio, however, you'll find the same twin-turbocharged aluminum 2.9-liter V-6 that packs the fenders of the Giulia Q-fog, making the same 505 horsepower and 443 pound-feet of torque. For the Stelvio, Alfa claims a zero-to-60-mph time of just 3.9 seconds and a top speed of 177 mph. That's faster than a Chevrolet Camaro SS or a Ford Mustang GT, but a distressing 14 mph slower than the Giulia Quadrifoglio.

But it's hard to be stung by such comparisons when the engine that powers both vehicles has such provenance. This six is essentially a scaled-down version of the twin-turbo V-8 that powers the Ferrari California T, GTC4Lusso T, and the 488, right down to the 90-degree bank angle. In fact, the Alfa packs no balance shafts to quell the vibration inherent in a perpendicular six. But in our experience with the Giulia, the imperfect layout grants the engine a hard-edged sound without imparting undue vibration to the structure.

57%
Crossovers make up 57 percent of Porsche's sales. We expect that percentage will be even higher for Alfa.

An eight-speed automatic transmission backs up both engines and sends power to all four wheels. Alfa's Q4 all-wheel-drive system can route up to 50 percent of the engine's torque forward, or 100 percent to the rear wheels.

▼ STYLING

For a crossover based on a sedan architecture, the Stelvio looks . . . pretty obviously like exactly what it is. The daylight opening, the body-side crease passing through the door handles, and the haunches leave no doubt as to the family tie. The grille and

hood appear to be the same parts that are used on the Giulia, just with different concentrations of frog DNA. But the additional cuts, bulges, and busyness along the Stelvio's rocker panels effectively mask its greater height. The quad exhaust and faux diffuser seen on these pages will be exclusive to the Quadrifoglio.

▼ INTERIOR

From the inside, there's no missing the Stelvio's performance intent. Drivers sit behind a flat-bottomed steering wheel with a bright-red starter button grafted beneath the left spoke. Those looking for more flair can opt for aluminum shift paddles, while the Quadrifoglio adds swollen handgrips at 10 and 2, as well as carbon-fiber trim and red accent stitching to match the top-level Giulia's dash and door finishes. Quadrifoglio buyers who want to go all out can order carbon-fiber-shell Sparco sport seats. Those interested in tech will be more interested in the seven-inch color TFT screen tucked between the tach and speedometer, complemented by a 6.5-inch infotainment screen in the middle of the dash. Uplevel Stelvios feature an 8.8-inch central unit. Apple CarPlay and Android Auto are standard, and handwriting recognition will be available sometime after the crossover's introduction. Alfa isn't talking about launch dates or pricing yet, but we figure it will take around $50,000 for a base Stelvio and into the high $70Ks for a Quadrifoglio, with sales to start this fall.

THE DAYLIGHT OPENING, THE BODY-SIDE CREASE PASSING THROUGH THE DOOR HANDLES, AND THE HAUNCHES LEAVE NO DOUBT AS TO THE FAMILY TIE BETWEEN THE STELVIO AND THE GIULIA SEDAN.

WeatherTech®

Automotive Accessories

IMSA WeatherTech SportsCar Championship

SPORTS CAR RACING DONE RIGHT!

Accessories Available for

Acura · Audi · BMW · Buick · Cadillac · Chevrolet · Chrysler · Dodge · Ferrari · Ford · GMC · Honda · Hummer · Hyundai · Infiniti Isuzu · Jeep · Kia · Land Rover · Lexus · Lincoln · Maserati · Mazda · Mercedes-Benz · Mercury · Mini · Mitsubishi · Nissan Oldsmobile · Plymouth · Pontiac · Porsche · Saab · Saturn · Scion · Subaru · Suzuki · Toyota · Volkswagen · Volvo · and more!

Order Now: 800-441-6287

American Customers
WeatherTech.com

Canadian Customers
WeatherTech.ca

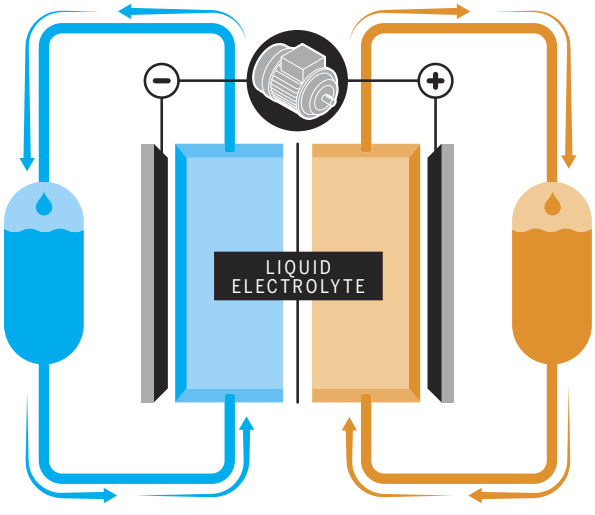
European Customers
WeatherTech.eu

© 2017 by MacNeil IP LLC

A BETTER BATTERY

A SURVEY OF WHAT MIGHT COME AFTER LITHIUM-ION. ***by Eric Tingwall***

HOW WE STORE ENERGY will be critical to the future of the electric car. While lithium-ion batteries are likely to remain the standard for at least the next decade, academic researchers and startup companies are racing to discover, design, and manufacture alternatives that will move beyond the limits of today's chemistries. The following three technologies show the greatest potential:



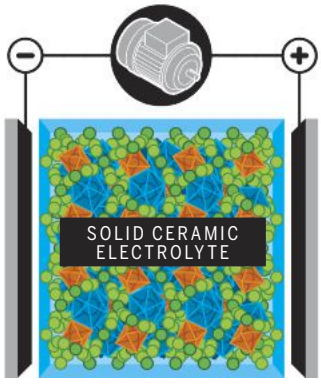
REDUCTION-OXIDATION FLOW

In brief: Here, energy is stored in tanks as two liquid electrolytes rather than in the positive and negative electrodes. The electrolytes generate electricity as they're pumped through the battery cells. Recharging can occur either onboard by reversing the process or by replacing the electrolyte at a fuel station.

What might stop it: Many experts believe that achieving adequate range with a flow battery will require storage tanks too large to be practical in a vehicle.

Where it stands: NanoFlowcell, a company based in Liechtenstein, claims that it has a working flow-cell prototype vehicle that drove for 14 hours at city speeds with two 42-gallon tanks of electrolytes, although skepticism runs high in the scientific community. A startup founded by MIT researchers, 24M recently pivoted from reduction-oxidation flow batteries to what it calls semisolid lithium-ion batteries, specifically due to the packaging constraints of the large storage tanks.

SOLID-STATE LITHIUM-ION

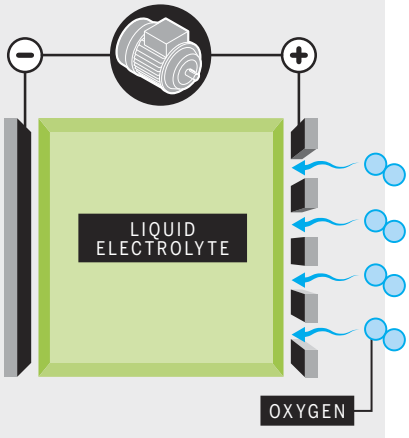


In brief: A solid ceramic electrolyte replaces the liquid electrolyte in today's lithium-ion cells, leading to a battery that is nonflammable, doesn't degrade over time, and doubles the amount of energy that can be stored in a given volume. That last part is possible because the solid electrolyte enables the use of pure metallic lithium in the negative electrode. The performance of solid-state batteries also improves with heat, eliminating the need for liquid cooling.

What might stop it: The ceramic electrolyte is up to five times heavier than the liquid alternative, and the thin, brittle sheets will need protection from jarring road impacts. Performance also suffers in low temperatures.

Where it stands: Dyson, the vacuum manufacturer that also has a grant from the British government to build an electric car, purchased solid-state-battery startup Sakti3 in 2015. However, Sakti3 uses a thin-film production method that likely won't scale for automotive applications. Researchers at the Sakamoto Group are working to produce the ceramic material in bulk with batches of powder.

METAL-AIR



In brief: Part battery, part fuel cell, a metal-air cell uses the oxygen from air pumped through the battery to drive the electricity-generating chemical reaction. This is much lighter than storing the oxidant as a solid material in the battery, resulting in batteries with up to 10 times the energy density of a lithium-ion one. Lithium-air batteries grab a lot of headlines, but there's even more potential in zinc-air cells due to zinc's abundance and low cost.

What might stop it: Rechargeable metal-air batteries are a fairly recent development and have a limited number of charge-discharge cycles before their storage capacity significantly degrades.

Where it stands: Arizona-based Fluidic Energy has installed rechargeable zinc-air batteries in developing countries to act as buffers for unreliable electric grids. Tesla holds a patent for a vehicle that uses a metal-air battery as a range extender after the lithium-ion pack is depleted, thus limiting the number of charge cycles the secondary battery faces.

illustrations by CHRIS PHILPOT

The All-New

PRIUS PRIME

TOYOTA'S MOST ADVANCED HYBRID YET

EPA-Estimated 133 MPGe[1]

If you're going to be making back-and-forths, here-and-theres, or even long trips, you'll appreciate Prius Prime's class-leading EPA-estimated 133 MPGe[2] and EPA-estimated 640-mile range.[3,4] Combine that with its aerodynamic dual-wave rear glass design, lightweight carbon-fiber-reinforced-polymer rear hatch, innovative dual motor drive system and enhanced battery capacity, and yes, it's easy to see why Prime is Toyota's most advanced hybrid yet.

TOYOTA | *Let's Go Places*

Prototype shown with options. Production model may vary. 1. 2017 Prius Prime EPA-estimated combined MPGe. Actual MPGe will vary and is dependent upon many factors, including charging practice, driving style, road/traffic conditions, outside temperature, air conditioning control levels, payload/cargo weight, proper tire pressure, vehicle maintenance, battery age and changes in energy costs. Battery capacity will decrease with time and use. For more information on MPGe and range, please see www.fueleconomy.gov. 2. EPA-estimated combined MPG equivalent of non-luxury plug-in hybrids, as of November 2016. Actual MPGe will vary based on driving habits, charging practice, battery age, weather, temperature and road/traffic conditions. Battery capacity will decrease with time and use. For more information, see www.fueleconomy.gov. 3. Based on fueleconomy.gov non-luxury plug-in hybrids, when fully charged, using gas and electricity. Actual mileage will vary. 4. 2017 Prius Prime EPA-estimated range rating when fully charged and with a full tank of gas. Excludes driving conditions. Actual mileage will vary. ©2016 Toyota Motor Sales, U.S.A., Inc.

The Social History of . . .

THE VOLVO WAGON

HOW DID STATION WAGONS COME TO DEFINE THIS SWEDISH CARMAKER? ***by Brett Berk***

IF THE VOLVO BRAND were a Rorschach blot, most Americans would see a station wagon. But this didn't come about as the result of some Swedish plot for domination of the American suburbs. It was an accident.

In the mid-1950s, around the time that Volvo first considered exporting cars to the United States, the brand was unsuccessfully experimenting with selling chassis to independent coachbuilders, but in so doing had built up a surplus of unsold chassis. "So," says Volvo historian Per-Åke Fröberg, "the management said, 'Let's start to do our own wagon.'" Aimed at Sweden's small-business owners who needed a practical car and a family car but who couldn't afford both, the wagon was a way to grow the lineup and use the extra platforms.

The resulting Duett and subsequent Amazon were oddball outliers and likewise found homes with American oddball outliers. "East Coast or West Coast. Liberal, highly educated, intellectual," Fröberg says. "Somewhat radical, a bit bohemic." After that, the brand more or less made a wagon version of every model.

It was with the release of the 144 wagon that the long-roofed Volvo began to morph into the rectilinear package seen in our minds' eye. But the real breakthrough for the brand in America came with the 200-series estate, introduced in 1974. By the time its production run ended in 1993, nearly 2.9 million had been sold worldwide. Based on Volvo's Experimental Safety Car, shown at the 1972 Geneva motor show, the 200-series cemented the brand's reputation for safety. The U.S. government purchased some two dozen sedans and wagons for testing in 1976 and canonized them as the benchmark all other manufacturers had to meet for crashworthiness. "And when that became known," Fröberg says, "Volvo of course used that. There was a famous ad of a Volvo in front of the Capitol saying: 'It shouldn't take an act of Congress to make cars safe.'"

The release of the 240 wagon also coincided with baby boomers coming into their peak earning/breeding years. Before Jeep Grand Cherokees, SUV "coupes," or even minivans, a wagon was the original active-lifestyle vehicle. Over the next few decades, with the 700, 800, and 900 series, wagons became Volvo's best-sellers, accounting for around one-third of the brand's American sales—and even more in some regional markets.

Then, just recently, Volvo fled from the wagon in a quest to move upscale. According to Bob Austin, who was head of marketing for Volvo Cars of North America from 1991 to 2002, the thinking was that "in order to move up-market, you needed to be more stylish, more expensive, and less practical." Basically, all the qualities that are the wagon's antitheses.

With the updated V60 and the forthcoming V90, Volvo's wagon sales have rebounded from their recent nadir, and the brand seems to be reembracing the estate. This is in part because kids who came of age during the wagon's last ascension are now in the market for grown-up cars, and nostalgia's siren song is loud. But it's also because the cars' innate durability means the brand cannot outrun its heritage.

"Other brands have done a wonderful job repositioning themselves. But they were aided by the fact that their older cars were largely disposable," Austin says. "Volvos as boxy and durable wagons? There are still cars out there from the '80s and '90s demonstrating that every day."

THE BIG BREAK

Volvo's 1972 Experimental Safety Car incorporated features such as airbags, anti-lock disc brakes, a high-strength-steel passenger cell, and impact-absorbing crumple zones. Its semi-passive seatbelts had less staying power.

illustration by SEAN McCABE

MOUNTAINS OF TROUBLE

OUTSIDERS

TUESDAY
JANUARY 24
WGN
AMERICA

A True Underdog Story

SPARE CHANGE

HOW MUCH DOES A SPACE-SAVER SPARE TIRE REALLY IMPACT A CAR'S PERFORMANCE? ***by Josh Jacquot***

IN OUR MINDS, this was going to be a lot more exciting. Our plan to test a Ford Mustang GT with a space-saver spare in place of the full-size rubber at one corner seemed not just imprudent but also stood in direct violation of the advice of the owner's manual and our attorneys. Mom also weighed in against it. The manual was most explicit: "... do not exceed 50 mph" it warned, with another warning on the diminutive donut. But we defied all that because we wanted to see how much emergency performance you can expect when your car is wearing a spare.

Surely there would be fire—actual flames!—from the mini spare as we relentlessly circled the skidpad, reducing the donut to smoldering rubber in only two laps. If we weren't handy with the extinguisher, the conflagration might just consume the entire Mustang in a matter of seconds. There would be explosions, air tankers, and rescue choppers. Monkeys and zombies would sprint to escape the inferno. Perhaps not, but you get the point. It was sure to make the typical cars-and-coffee Mustang debacle look like mere curb rash.

In truth, we didn't even need common sense to avoid catastrophe. Nor, in fact, will you. Because the most remarkable thing about driving a Mustang at its limit with a space-saver spare on one corner is just how unremarkable it actually is. The T155/60R-18 Maxxis mini spare that Ford supplies as an option on Mustangs without the Performance pack absorbed the abuse with virtual indifference when inflated to the recommended 60 psi. That it produced handling and braking results very similar to the 255/40ZR-19 Pirelli P Zero Nero All Season tire it replaced was as surprising as it was anticlimatic. There's a lot more going on here than just a flat-tire contingency plan: "The goal with a mini spare," says Jamie Cullen, supervisor of Ford's Vehicle Dynamics Team, "is to come as close to the standard tire's performance and response as possible. Mini spares use an aggressive compound and minimum tread depth to achieve those results." Here are ours:

SUPERMINI

Some suppliers are known to use the same compound on their mini spares that they use on superbike tires. And our spare did indeed have soft rubber. Pre-test, we measured 4/32 inch of tread depth on our space saver. Post-test, though the wear wasn't consistent, tread depth was reduced to roughly 2/32 inch. The OE fitment Pirelli P Zero Nero All Season tires offer 10/32 inch of tread depth when new.

BRAKING Full ABS braking from 70 mph with the spare on the left front was barely more dramatic than with four P Zeros. There was a mild pull to the left, but not so much that even the most distracted driver couldn't make the correction, Cherry Blossom Frappuccino in hand. And, at 173 feet, it was only one foot longer than with four standard tires. The pull was less significant with the spare on the left rear, though stopping distance increased another foot.

SKIDPAD Roadholding testing followed our standard protocol, which is to lap a 300-foot circle in both directions and average the results—in this case, 0.88 g with the P Zeros all around. When fitted on the outside-front position, the spare reduced feel, response, and grip for 0.84 g. When we turned the other way, with the spare on the inside, its presence was barely perceptible and grip was 0.88 g, for an average of 0.86 g. Moving it to the inside rear increased the Mustang's willingness to rotate and improved the result to 0.91 g, granting us insight into what sprint-car master Steve Kinser experiences most Saturday nights. Switching directions had the opposite effect, yielding 0.85 g. Average grip worked out to—wait for it—a very Pirelli-like 0.88 g.

ACCELERATION Zero-to-60-mph acceleration suffered more dramatically than any other test, slowing from 4.8 seconds to 5.2 with the spare standing in for the left-rear Pirelli. The Mustang's limited-slip differential attempts to rotate the tires at the same speed, despite diameters that differ by almost two inches. The result is less grip, which means launching either less aggressively or with more wheelspin, both of which hamper acceleration. Again, once the wheels regained traction, there was a slight pull to the left, and again, it was easy to correct. The resulting narrow/wide burnout marks, however, were priceless. As will be the letter we send to our attorneys, relieving them of their duties. Mom can keep her job.

RESULTS

Compact-spare location	70-to-0 mph	Roadholding, 300-ft skidpad	Zero to 60 mph
None	172 ft	0.88 g	4.8 sec
Front	173 ft	0.84 g outside 0.88 g inside 0.86 g average	—
Rear	174 ft	0.85 g outside 0.91 g inside 0.88 g average	5.2 sec

photography by A.J. MUELLER

Quicken Loans Inc.; NMLS#3030; www.NMLSConsumerAccess.org. Equal Housing Lender. Licensed in 50 states. AR, TX: 1050 Woodward Ave., Detroit, MI 48226-1906, (888) 474-0404; AZ: 16425 North Pima, Ste. 200, Scottsdale, AZ 85260, Mortgage Banker License #BK-0902939; CA: Licensed by Dept. of Business Oversight, under the CA Residential Mortgage Lending Act and Finance Lenders Law; CO: Regulated by the Division of Real Estate; GA: Residential Mortgage Licensee #11704; IL: Residential Mortgage Licensee #4127 – Dept. of Financial and Professional Regulation; KS: Licensed Mortgage Company MC.0025309; MA: Mortgage Lender License #ML 3030; ME: Supervised Lender License; MN: Not an offer for a rate lock agreement; MS: Licensed by the MS Dept. of Banking and Consumer Finance; NH: Licensed by the NH Banking Dept., #6743MB; NV: License #626; NJ: Licensed Mortgage Banker – NJ Dept. of Banking, 1st (and/or 2nd) mortgages only; NY: Licensed Mortgage Banker – NYS Banking Dept.; OH: MB 850076; OR: License #ML-1387; PA: Licensed as a 1st Mortgage Banker by the Dept. of Banking and licensed pursuant to the PA Secondary Mortgage Loan Act; RI: Licensed Lender; WA: Consumer Loan Company License CL-3030. Rates subject to change. Restrictions may apply. ©2000 – 2016 Quicken Loans Inc. All rights reserved. Lending services provided by Quicken Loans Inc., a subsidiary of Rock Holdings Inc. "Quicken Loans" is a registered service mark of Intuit Inc., used under license.

Four and a half years ago, as I prepared to move to Montana, I rented a Jeep Liberty from Thrifty in Missoula. The managing owner, Owen Kelley, greeted me at the desk, saying, "I know who you are." I immediately struggled

to think of any Thrifty vehicles I might have wrecked. But just as I came up with nothing, Owen added, "I have a whole bunch of Mustangs, including a '67 Shelby GT500."

"Wow," I replied, certain he might be the kind of guy who sold goat glands in high school. "We should go for a ride sometime."

It took years, but "sometime" was last Sunday, on one of the brightest, loveliest fall days in the planet's evolution—larch trees the color of gold ingots and the aspens and cottonwoods the color of highway workers' vests, a kind of fluorescent hue that Mother Nature is not supposed to possess.

Needless to say, Owen does own a '67 GT500—dark moss green with white stripes. It is the most pristine Shelby Mustang I have ever seen. When I met him at our local Cenex station, the car's hood was raised and he'd already drawn a crowd. Montanans don't give an ounce of kitty litter for Ferraris and Lamborghinis, but man, do they love their Mustangs.

Owen bought the car 34 years ago, when he drove to a Mustang club convention in Calgary, Alberta. At that point, the car was filthy, faded, and—with 54,000 difficult miles on the clock—already a bit weary. The owner had paid $5200 for it new. Owen offered $7500. Some hand-wringing ensued, but eventually the seller countered with $7800 plus free delivery to Missoula. Since then, Owen, by himself, repainted the Shelby in its original colors—the stripes are paint, not tape—and has driven the thing 40,000 miles, including a trip to Las Vegas, where it was 105 degrees. No A/C, of course. "My wife and I wore our bathing suits," he remembers.

Along the way, Owen met Carroll Shelby twice at club soirees in Vegas. When the GT500 was introduced, Shelby had said it was "the first car I'm really proud of." Ol' Shel signed the underside of Owen's passenger's-side visor—"I couldn't bear having him scrawl all over the dash, which always looks to me like vandalism"—and Owen was surprised that Shelby didn't extend a palm for payment. At the time, Shelby was partly supporting himself—à la Pete Rose—selling autographs on everything from mud flaps to 1966 seven-liter Ford Galaxies, a copy of which, sans autograph, Owen also owns. "The man was a quick draw with a Sharpie," Owen admitted. As Shelby walked away, he said to Owen, "I'll never forget the boys from Montana." It might have been a compliment. It might have been a threat.

THE SALMON RIVER, FALL COLORS, AND A SEVEN-LITER MUSTANG. LIFE COULD BE BETTER—BUT ONLY IN THE MOVIES.

When I climbed behind the wheel, I was transported back to the '60s. I believe I began growing zits. The steering was so awful that it would have been rejected on WWII landing craft. But I owned a '70 Mustang Boss 302 that was equally nautical. That a lot of folks herded these cars around racetracks strikes me now as semisuicidal. On the other hand, the GT500's ride was surprisingly good. Plus, there was the familiar waft of unburned fuel in the cockpit; a seven-liter exhaust boom that made conversation tricky; a clutch pedal heavier than remedial trigonometry; an amount of wind noise that would have flustered the Wright brothers; and furnace-quality heat that flowed unimpeded through the firewall. My Orvis shirt was a mop in 30 minutes. On top of that, I believe I tried to shift into the nonexistent fifth gear maybe 200 times, which always made Owen clear his throat like Richard Nixon. Otherwise, he's a lovely 56-year-old guy. I saw no goat glands.

Owen won't enter his GT500 in concours events. "If a judge says to me, 'Hey, you got a rock chip over here,' I might try to kill him. I remind people, 'Look, I *drove* the car here. See? No trailer.'" In fact, last Sunday we sent plenty of gravel flying, and Owen never flinched. "When I retire," he told me, "I'll make a two-year project of repainting it myself. In the meantime, I'm gonna beat the shit out of it." What a sublime mantra for a car guy driving a Mustang worth at least $125,000. In fact, that night I saw a '68 GT500 KR in *Sports Car Market*, same color as Owen's. Asking price: $189,900.

I'm pretty sure the point of our drive was that there was no point. We just sloshed around in the car's considerable aura as Owen described, among other wonders, his 1985 drunken dinner with Hunter S. Thompson. Oddly, I hadn't gone for an aimless drive in, oh, about a decade. It's not as if I didn't have access to cool cars. It's just that driving a car meant thinking about a car, which inevitably meant writing about a car, which meant work. I had to retire to realize what I'd been missing.

John Phillips

PHOTOGRAPH BY JULIE GOTHRUP

DANIEL STEIGER

LIST PRICE
$795

88% OFF
NOW ONLY
$99

YOU SAVE
$696

The Daniel Steiger **VELOCITY**

- **Guarantee:** 5 Year Movement Guarantee
- **Case Width Approx**: 44mm / 1.7in
- **Case Depth Approx**: 10mm / 0.4in
- **Dial Colour**: Black with Chequered Pattern
- **Case Material:** Stainless Steel
- **Sub Dials:** Day / Date / 24hr
- **Strap type:** Tire Track Black Rubber Strap
- **Water Resistance:** 5ATMs / 50 metres

AVAILABLE IN:
RED
ACCENTS

AVAILABLE IN:
ORANGE
ACCENTS

ORDER NOW TOLL FREE 24/7 ON 1-877 550 9876

and quote promo code **CD71VE**

Or order online at www.timepiecesusa.com/cd71ve

Timepieces International Inc, 12800 N.W. South River Drive, Medley, FL 33178

Report to the Future Tech Committee, Society of Vehicle Engineers: As there has been much discussion regarding a new form of propulsion being proposed for motor vehicles, we have been tasked with compiling

this report on the technology and its prospects for practical and commercial applications. Here is the executive summary:

As has been widely reported, the proposed technology, combustion of hydrocarbon fuels in a closed cylinder, represents a dramatic departure from the battery-electric powertrains that currently power 99 percent of our nation's vehicle fleet. Given the radical upheaval this would cause to both the automotive-manufacturing industry and our all-electric recharging infrastructure, a thorough examination of internal-combustion technology is in order before further investment should proceed.

Early prototypes of the new "engine" appear as a heavy and bulky metal casing called a "block," usually made of iron or aluminum, in which one or several reciprocating pistons are connected to a common crankshaft with rods. The hydrocarbon fuel and air are introduced separately to each cylinder via manifold vacuum or directly under pressure and ignited by a sparking device, whereupon the rapid heating and expansion of the gases displace the piston(s). The process is repeated serially to create continuous crankshaft rotation.

Several technical and market challenges are apparent. The number of moving parts in the "engine" that must be manufactured and machined to fine tolerances is many times that of our current electric motors, which have a single rotating assembly. Also, the best designs are only about 40 percent efficient as waste heat is lost through friction, transfer to the cooling system, and exhaust. Additionally, unlike electric motors, which make peak torque just above zero rpm, the new engine's torque delivery is by comparison delayed, as it must first develop significant crankshaft rotational speed.

Furthermore, unlike our common electric motors, constant lubrication of the engine's moving parts is required by a separate supply of hydrocarbon lubricant. This lubricant has a limited life due to contamination and heat cycling and must be replaced periodically. Will today's motorists, accustomed to nearly maintenance-free electric powertrains, even accept a vehicle that has frequent and possibly costly service intervals in which the used lubricant, a slick and staining material laced with toxic heavy metals, must be safely disposed of?

Further, hydrocarbon combustion in the presence of the two main atmospheric components of nitrogen and oxygen produces substantial noise that will have to be greatly suppressed to be acceptable to both drivers as well as communities accustomed to hearing nothing from a motor vehicle but a faint whine. Also, the chemical reaction produces compounds that some medical experts believe to be unhealthy.

There is also the combustible nature of the fuel. Unlike electricity, which does not leak or evaporate and which has a proven infrastructure for home delivery, hydrocarbon fuel, and specifically its most commercially viable form, gasoline, both leaks and evaporates and is extremely flammable as well as toxic, the odors alone inducing rapid nausea. While batteries can overheat, that is a gin fizz compared with what gasoline does when lit. And to have any meaningful range, vehicles will be required to carry up to 20 gallons of it, enough explosive power to easily destroy the vehicle, its occupants, and surrounding structures.

Thus, the issue of gasoline refueling raises many questions. Obviously, consumers cannot be allowed to refuel at home as they currently do with free electricity from their rooftop solar panels. They will have to drive to a licensed commercial operation outfitted with the requisite specialized equipment. The SVE Safety Committee is already studying the matter and, in consultation with our lawyers, has developed some initial recommendations, such as requiring the driver to leave the vehicle with a trained technician who conducts the refueling in an open-air pit of reinforced concrete wearing some form of blast-proof garment. On the positive side, vast sources of crude oil, the raw form of gasoline, are said to lie in a wide range of locations, from the Alaskan tundra to the coastal waters of California, though the most accessible pockets are beneath the sands of the Middle East. The State Department has noted that increased trade resulting from our bulk purchases of crude oil can only help further cement friendly relations with our many allies in the region.

In summary: The market penetration of the internal-combustion engine is handicapped by several technical hurdles. A small market is possible among machinery enthusiasts of the type who prefer complex mechanical watches to simple and reliable digital timepieces. However, estimating the size of this market would be, at this point, purely conjecture.

Aaron Robinson

Cut Precise Metal Shapes In A Flash!

"PlasmaCAM is a well thought-out tool. ***The software is incredible; it's intuitive and easy to use.*** I can quickly go from concept to a finished part. I haven't seen anything we can't do with this machine. It has saved us so much time and effort, it's just incredible!"

-JIM, CUSTOM TURBO ENGINEERING
turbochargers & related components

- ***Make Artistic Projects and Mechanical Parts***
- ***Cut Detailed Custom Work or Mass Production***
- ***Includes Industry-Leading Software***
- ***Simple to Operate – Runs Off Your Computer***

Call with this code M5VPE for your FREE demo video today!

(719) 676-2700 • www.plasmacam.com
PO Box 19818 • Colorado City, CO 81019

Plasma CAM Inc.

I don't normally write about tires, for the simple reason that I prefer to know what I'm talking about. And what am I going to tell you about tires? "Well, you can really feel the stiction in this new compound, what with the

perpendicular cross siping and the anti-squirm belt carcass." I mean, yeah, that sounds pretty smart, and you'd definitely believe me about the siping, but the reality is that I'm not a machine that tests tires. I'm just a man who makes things up about tires and is kind of clueless about the whole subject. For instance, what kind of tires do you think I have on my own car—Pirellis or Hankooks? Trick question! It's both, despite stern warnings from Tire Rack about mismatched grip levels and embarrassing myself.

So when Cooper invited me to the intro for the Zeon RS3-G1, my initial response was to wonder what kind of robot that is. Turns out it's a tire, though an ultrahigh-performance all-season one. Moreover, Cooper intended to showcase the RS3-G1s by mounting them on open-wheel race cars and unleashing a pack of journalists in an actual race. This sounded like a preposterous idea, the kind of plan that could only come from an innocent company unacquainted with the unctuous pack of half-feral parolees that writes about cars. Why, they'd be lucky to see one full lap before witnessing a scene that would look like a cross between *The Blues Brothers* and Pickett's Charge. There'd be more red flags than a Tiananmen Square parade. I signed up immediately.

The plan was to turn us loose on the road course at Palm Beach International Raceway in identical Ray Formula Cars GR11s, which run a Mazda 2.0-liter four-cylinder, a paddle-shift sequential gearbox, and, for our purposes, Cooper rubber. About 10 of us listened to a presentation on the RS3-G1, which is supposed to last 50,000 miles and deliver 1.0 g of grip, although I'd think that the latter might not be guaranteed if you put them on a '75 Chevy Nova. Debriefing complete, we strapped in to learn the track and scientifically ascertain how the Zeons react to severe flat-spotting.

Our chaperones were instructors from the Lucas Oil School of Racing, with Johnny Unser, a technical advisor for Cooper, serving as a ringleader/Zen master.

I'm not sure of the exact point when our hosts came to their senses about wheel-to-wheel racing. But somewhere along the line, among the spins and stalls and locked brakes, somebody made the sage decision that a crew of part-time tire evaluators should probably not be attempting to outbrake one another into Turn 9 at 124 mph, which is what commenced immediately after we were set loose for practice laps. So, let me rephrase that: There was no official racing, but for some of us, the practice sessions began to look suspiciously race-like. They were, at the very least, race-adjacent.

When you're cinched tight into a single-seat cockpit, looking out over fenderless front tires and banging through the gears with stubby paddles mounted behind a steering wheel the size and shape of an Eggo box, well, you're quickly consumed by feverish delusions. By the time I pulled into the pits, I expected someone to offer me a jug of milk and ask whether I wanted to sign with Ganassi or Penske. Instead, I got advice from the instructors, who'd been taking notes on this goat rodeo. One of them, Jonatan Jorge, told me I was downshifting late into corners, almost as if I were forgetting to shift. "That can happen when you're not breathing, not getting enough oxygen to your brain," he said. "Remember to breathe." Nothing punctures your bubble of self-satisfaction quite like the suggestion that you're barely smart enough to run your own autonomic nervous system. He also delivered the verdict that I was not getting low enough in a particular corner because—get this—I was looking too far down the track. "Look down the track," he said, "but look at the grass on the apron, look at everything." Because if you look too far ahead, you miss what's right next to you. That's not just driving advice, friends. That's life advice.

Suitably chastened, I went back out for the grand finale—three timed laps with an instructor driving ahead, like a real-life ghost car. While it wasn't wheel to wheel, it was still timed competition, and I was all amped up as I chased 19-year-old IndyCar driver R.C. Enerson around the course, watching his front tires twitch frenetically side to side as he made minute steering corrections. Is it too late for me to become a 19-year-old IndyCar driver? I hope not.

You're probably dying to know who won, but that's not important (it was me). What's important is that Unser texted me the next day to say that some teenage kart kids who came in after us were two seconds faster. Can you believe that? That's right, Johnny Unser texted me. As for the tires, they appeared to cope well with both on-track abuse and, later, off-track Camaro rental-car abuse. I might buy some for my own car, next time around. No promises, but I might even get four at a time.

Ezra Dyer

What owners say about V1...

★★★★★ *Bill P., Phoenix, AZ*

Where's the radar? An arrow lights up, pointing either Ahead, to the side, or Behind. And, amazingly, it's never wrong.

★★★★★ *Arnie R., Atlanta, GA*

So easy to operate, a box with one knob. No need to poke around at full-arm's reach for little buttons the size of rice grains.

★★★★★ *Glenna R., Dallas, TX*

Love the arrows! Where's the radar? They tell me every time. A detector without the arrows is like a car without headlights.

★★★★★ *Chas S., Charlotte, NC*

Situation Awareness you can trust. With the Radar Locator arrowing toward threats, and the Bogey Counter telling how many threats you face, V1 makes defense easy.

★★★★★ *Cal L., Trenton, NJ*

I've owned my V1 since 2001, and I've had it upgraded twice. I trust the arrows to point out every radar trap. When I know *where*, I know how to defend.

★★★★★ *Ed H., Las Vegas, NV*

How can anyone not be smitten by the Arrows? Radar ahead needs a different defense than radar behind. When I know where, I know what to do. When I put the threat behind me, the arrows confirm it. Without the arrows, you're guessing.

★★★★★ *Rob R., Sacramento, CA*

This is the slam dunk best radar detector. No databases to keep updating, or other "features" I'll never use. Instead V1 tells me the important stuff—the Bogey Counter tells you how many threats within range and the red arrows tell where they are.

Trust...V1 earns it one ambush at a time.

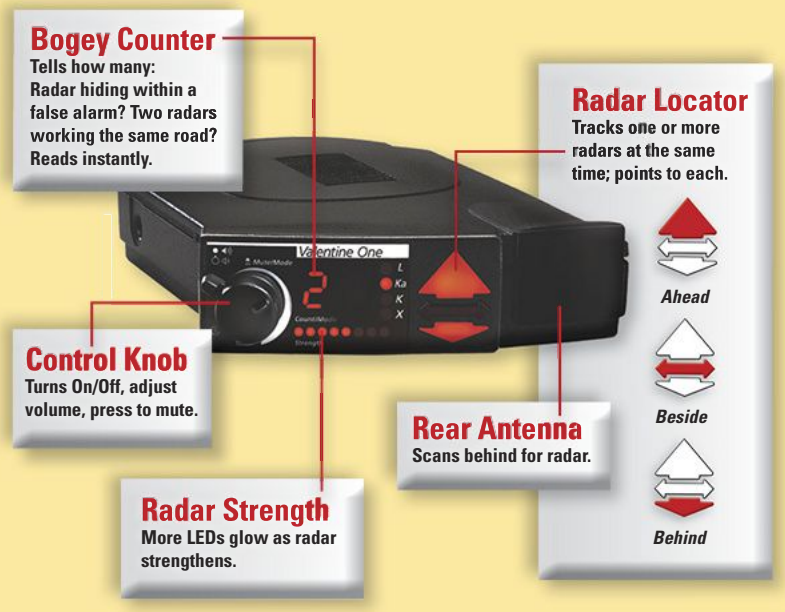
★★★★★ ***Harold B., Houston, TX***

On my way home this afternoon I was following another detector user. I could see red blinking in his windshield as we went past the first radar. Thinking the danger was behind, Mr. Ordinary Detector User hit the gas.

Uh-Oh. **V1's Radar Locator was showing two arrows, one pointing toward the trap now behind, and a second arrow ahead. The "2" on the Bogey Counter confirmed we were being double teamed.**

Sure enough, Mr. O. D. User cruised into the second trap up the hill at 15 over and got himself a blue-light special.

V1 points to *every* trap. I trust it completely.



Mike Valentine
Radar Fanatic

© 2016 VRI

Call toll-free 1-800-331-3030

- ☐ Valentine One Radar Locator with Laser Detection - $399
- ☐ Carrying Case - $29 ☐ Concealed Display - $39
- ☐ SAVVY® - $69 ☐ V1connection™ - $49 ☐ V1connection™ LE - $49

Plus Shipping / Ohio residents add sales tax

30-Day Money-Back Guarantee

Valentine One is a registered trademark of Valentine Research, Inc.

www.valentine1.com

Valentine One® RADAR LOCATOR

Valentine Research, Inc.
Department No. YB27
10280 Alliance Road
Cincinnati, Ohio 45242

Ph 513-984-8900
Fx 513-984-8976

Mint Jelly

by Daniel Pund
photography by Marc Urbano

2017 Ford F-150 Raptor SuperCab

Pund hammers and floats the new Ford Raptor over a Nevada dreamscape, retracing the route of the old Mint 400 desert race. And you know what?

FORD

Screw that guy.

In my dreams, I can levitate. Always have been able to.

I can't fly; that nonsense is for dreamers. No, I can just lift off the ground and hang there, maybe six feet from the deck. Sometimes I go up as much as 10 feet, but never much farther. This serves no actual purpose. I'm not moving anywhere. I'm not taking advantage of my elevation to pick apples, or peep in second-story windows, or avoid anything on the ground. I'm just . . . levitating.

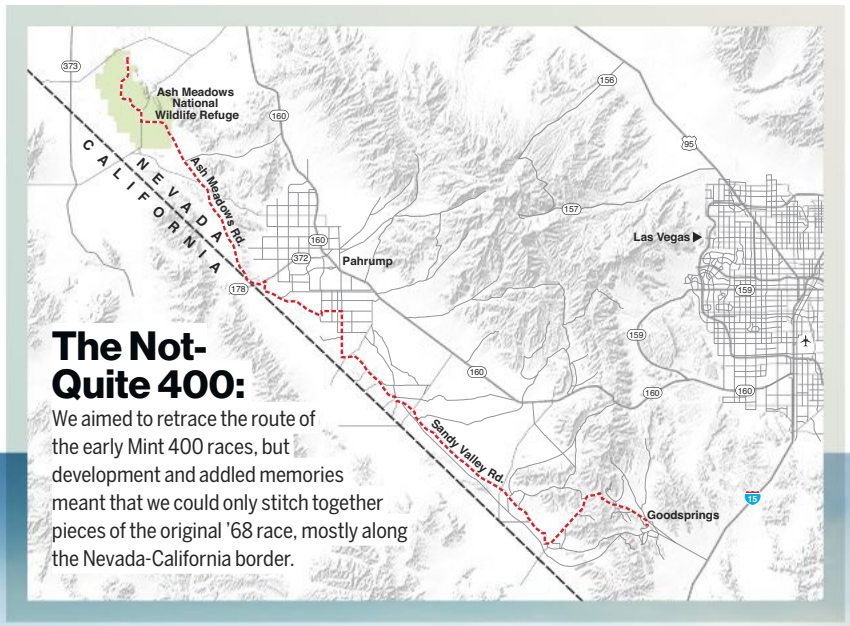
I'm convinced after spending a couple days in the Nevada desert with Ford's newest F-150 Raptor that it harbors similar dreams. In its promotional materials, Ford habitually shows the Raptor, both this generation and the last, leaping into the air, big wheels dangling. The corporation invariably notes that these shots are achieved through digital photo manipulation or were performed by a professional driver on a closed course. Curiously, the company sometimes mentions both provisos. But make no mistake; this beefed-up, desert-running, high-speed brute dreams of air as surely as I do.

And so, in preparation for this desert drive, I readied myself by conjuring up visions of our ruby-red Raptor suspended in midair, while the Mojave Desert streamed by underneath like a treadmill of rock and dust and crispy creosote bushes, and—sure, why not?—an adorable desert bunny or two.

In reality, it's not quite like that. The leap is more like a short guitar lick rising away from the chugging rhythm of the ground, which keeps pace with the truck until the 5700 pounds of badassery rejoins the shuffle. It never lasts long enough, the moment of giddy weightlessness. I solved this problem by doing it again and again and again until even our photographer had lost interest and refused to be a party to whatever might happen next.

But we're getting ahead of ourselves. We're here to test this new Raptor on the land for which it was created. We're roughly retracing the route taken by the early Mint 400 off-road races. The same basic route on which Parnelli Jones ripped all the wheels off the specially prepared Bronco he drove in the inaugural event in 1968. ("I cauliflowered the rims," he would later tell the *Las Vegas Review-Journal*.) The same event that used to hand out commemorative decanters filled with Jim Beam. The event that Hunter S. Thompson famously didn't actually cover in his book, *Fear and Loathing in Las Vegas*. The same event that, in 1981, hired an almost distressingly hot Vanna White as a trophy girl.

We had no doctor of journalism, no lawyer, no Parnelli, not even Ms. White accompanying us. Instead, riding right seat was Daryl Folks, one-time desert motorcycle racer, current Nevada adventure motorcycle tour operator, and the son of Casey Folks, a longtime Mint 400 competitor and the organizer of the current Mint 400. We started from Fremont Street, a.k.a. Glitter Gulch, the historical starting point of the early races. The Mint hotel and casino, which created the race as a promotional stunt, has long since vanished from the scene. Today, Fremont Street greets us with a presumably homeless young man holding a handwritten cardboard sign read-



The Not-Quite 400:

We aimed to retrace the route of the early Mint 400 races, but development and addled memories meant that we could only stitch together pieces of the original '68 race, mostly along the Nevada-California border.

MAP BY CHRIS PHILPOT

ing "Kick me in the balls for $1" and a restaurant that promises a free meal to anyone who weighs more than 350 pounds.

In the almost 50 years since the first race, Las Vegas has metastasized aggressively, so our dirt drive has to wait. We need to take a clotted expressway out to our starting point some 100 miles northwest of the city, in the Ash Meadows National Wildlife Refuge. Even on the open highway, the Raptor feels massive. In town, it feels roughly the same size as a garbage truck. And, keep in mind, we're piloting the less enormous of the two available Raptors, the SuperCab. The SuperCrew version, with its four full-size, front-hinged doors, stretches an extra 11.9 inches over our truck's already lengthy 220. But it's not the length of the thing that poses a problem—it's the engorged body and its trophy-truck-like box-flared fenders that make it so intimidating as a crosstown companion. At 86.3 inches, the Raptor is more than six inches wider than the already plenty bulky F-150.

This is not to say that the Raptor is slow or ponderous. Ford deleted the 6.2-liter V-8 that powered most of the last generation of Raptors and bolted in its place a pumped-up version of its twin-turbo 3.5-liter V-6, now with direct and port injection and 18 psi of boost. The new lump, which looks tiny buried in the engine bay behind an intake pipe that's about as fat and attractive as a sewer main, brings newfound muscle. Its 450 horsepower and 510 pound-feet of torque easily beat the V-8's output by 39 horsepower and 76 pound-feet. Combined with a weight savings of 404 pounds compared with the last Raptor SuperCab we tested (thanks, aluminum!), the Raptor is no longer just ballsy for a truck, it's a genuinely quick machine, period. This 5696-pound linebacker barrels to 60 mph in 5.0 seconds and on through the quarter-mile in 13.7 seconds at 100 mph. And full-throttle runs are accompanied by a genuinely thrilling intake and exhaust composition. Maybe we *can* live without the V-8 after all.

The Raptor's interior contains more knobs and buttons than the Ford Rouge plant. The 17-inch forged bead-lock-capable wheels are a $1165 option.

What the numbers can't really tell you is that around town in the standard drive mode (one of six settings), the throttle response is pretty soft. You have to wait for the new automatic to shuffle through its 10 gears before deciding on one. And then you'll have to wait a step or two for the turbos to wind up to full force before the truck gets to hustling. Call up sport mode with the steering-wheel-mounted rocker switch, which modifies the transmission's shift map and sensitizes the throttle pedal, and some of that delay is eliminated. We took to using sport for all around-town driving.

Out on U.S. 95, the Raptor clocks along happily at 85 mph. It's stable at speed. Its dedicated sport seats, with additional side bolstering, are firm and comfy. Even the knobby BFGoodrich KO2 tires are well behaved. There's no perceptible tire hum. The truck's relatively soft suspension setup and those standard, dedicated off-road tires mean that it can manage only 0.68 g of grip on the skidpad. But that's enough for day-to-day work. The tires also surely compromise braking performance. The Raptor needs 206 feet of roadway to stop from 70 mph. That's four feet longer than what the older, heavier truck could manage. If you want better on-road braking performance, you would need to mount dedicated street tires. And then what would be the point of the Raptor?

The Raptor might be a big lug in the city, but out in the hinterlands of the Nevada Mojave, where guys run for public office wearing cowboy hats and mustaches, the truck gets small quickly. Of course, plopped down in the middle of this soundless desert, everything but the desert itself seems small. The vast desert floor covered in creosotes, saltbushes, and yuccas looks like a nubby berber carpet as seen from a bug's eye. The surrounding mountains are

Top: The Ford Atmospheric Dust Generator. Above left: Three-inch-thick Fox dampers. Above: It's not pretty, but it is powerful and dirty.

great piles of ground cinnamon, cocoa powder, and unbleached flour. Sounds comforting, right? It is, until you realize that everything that lives out here is weaponized with needles, stingers, fangs, or firearms.

But the Raptor pays no mind. Out here, it's a toy in a sandbox. It's a leaping, bounding dust devil of inexhaustible energy and movement. We locked the terrain-response system in Baja mode, which relaxes the traction- and stability-control systems, puts the vehicle in four-wheel drive high, and commands the transmission to upshift as infrequently as possible (but to do so very quickly when it does). With the front wheels engaged in power delivery and with power between them parsed out by an optional Torsen limited-slip differential, the Raptor simply tears the crust off the desert floor, leaving behind dust as fine as talcum hanging high in the still air. Most of the trails we encountered could be traversed by a standard four-wheel-drive F-150. We know because we had one along as a chase vehicle. And it got through with only one punctured tire. Though it survived mostly intact, the F-150 was slow and uncomfortable, with its passengers' heads whipping violently from side to side in concert with every lump and ridge on the trail.

The Raptor, on the other hand, takes most of the beating for you, its big, aluminum lower control arms and rear solid axle pumping furiously up and down but leaving the body more or less level. This allows for speed—stupid, glorious speed. At one point on the section of trail just south of Pahrump, we peeked at the speedometer to find we were bullying down a path roughly the width of one Raptor at 85 mph. As far as we know, this is legal. In Baja mode or the similar mud/sand mode (which locks the rear differential), the truck resolutely refused to upshift. Instead, it just ran the engine near redline, goading us. The Raptor drifts gently across the rocky crust. There are dry-wash ditches that present themselves with no notice, requiring a firm jam of the brake pedal. The tail of the truck wiggles, the front tires drop into the ditch and then bound the truck upward, and the engine is still on boil, ready for you to jump back into the power.

There is an odd peace that overcomes you when you're concentrating intensely. Your hands and right foot do the driving while your

2017 FORD F-150 RAPTOR SUPERCAB

PRICE

AS TESTED **$63,005**
BASE **$49,520**

VEHICLE TYPE: front-engine, rear-/all-wheel-drive, 5-passenger, 2+2-door truck
OPTIONS: Luxury package, $9345; Raptor Technology package, $1950; 17-inch forged bead-lock-capable wheels, $1165; spray-in bedliner, $495; tailgate step, $375; heated steering wheel, $155
AUDIO SYSTEM: satellite radio, CD player, USB and Bluetooth-audio inputs, Android Auto and Apple CarPlay interfaces, 7 speakers

ENGINE

twin-turbocharged and intercooled V-6, aluminum block and heads
BORE X STROKE ..... 3.64 x 3.41 in, 92.5 x 86.7 mm
DISPLACEMENT ..... 213 cu in, 3497 cc
COMPRESSION RATIO 10.0:1
FUEL DELIVERY SYSTEM: port and direct injection
TURBOCHARGERS ..... BorgWarner
MAXIMUM BOOST PRESSURE ..... 18.0 psi
VALVE GEAR: double overhead cams, 4 valves per cylinder, variable intake- and exhaust-valve timing
REDLINE/FUEL CUTOFF ..... 6200/6200 rpm
POWER ..... **450 hp @ 5000 rpm**
TORQUE ..... **510 lb-ft @ 3500 rpm**

DRIVETRAIN

TRANSMISSION: 10-speed automatic with manual shifting mode
FINAL-DRIVE RATIO 4.10:1
ALL-WHEEL-DRIVE SYSTEM: part-time 2-speed with automatic front-axle engagement, helical limited-slip front and locking rear differentials
TRANSFER-GEAR RATIOS (LOW/HIGH) 2.64:1/1.00:1

GEAR	RATIO	MPH PER 1000 RPM (low/high)	MAX SPEED IN GEAR (rpm) (low/high)
1	4.70	2.0/5.2	12/32mph (6200/6200)
2	2.99	3.1/8.1	19/50 mph (6200/6200)
3	2.16	4.2/11.2	26/69 mph (6200/6200)
4	1.78	5.2/13.6	32/84 mph (6200/6200)
5	1.52	6.0/15.9	37/99 mph (6200/6200)
6	1.28	7.2/18.9	45/107 mph (6200/5650)
7	1.00	9.2/24.2	57/107 mph (6200/4425)
8	0.85	10.8/28.5	67/107 mph (6200/3750)
9	0.69	13.3/35.1	82/107 mph (6200/3050)
10	0.64	14.3/37.9	89/107 mph (6200/2825)

CHASSIS

full-length frame
BODY MATERIAL: aluminum stampings

STEERING

rack-and-pinion with variable electric power assist
RATIO 17.2:1
TURNS LOCK-TO-LOCK 3.2
TURNING CIRCLE CURB-TO-CURB ..... 44.0 ft

SUSPENSION

F: ind, unequal-length control arms, coil springs, anti-roll bar
R: rigid axle, leaf springs, anti-roll bar

BRAKES

F: 13.8 x 1.3-in vented disc, 2-piston sliding caliper
R: 13.7 x 1.0-in vented disc, 1-piston sliding caliper
STABILITY CONTROL: fully defeatable, traction off, competition mode

WHEELS AND TIRES

WHEEL SIZE ..... 8.5 x 17 in
WHEEL CONSTRUCTION ..... forged aluminum
TIRES: BFGoodrich All Terrain T/A KO2 LT315/70R-17 113/110S

EXTERIOR DIMENSIONS

WHEELBASE ..... 134.2 in
LENGTH ..... 220.0 in
WIDTH ..... 86.3 in
HEIGHT ..... 78.5 in
FRONT TRACK ..... 73.9 in
REAR TRACK ..... 73.6 in
GROUND CLEARANCE ..... 11.5 in
APPROACH ANGLE ..... 30.2 deg
DEPARTURE ANGLE ..... 23.1 deg
BREAKOVER ANGLE ..... 22.9 deg
FORDING DEPTH ..... 32.0 in

CARGO-BOX DIMENSIONS

LENGTH ..... 67.1 in
MINIMUM WIDTH ..... 50.6 in
HEIGHT ..... 21.4 in
VOLUME ..... 53 cu ft

INTERIOR DIMENSIONS

SAE VOLUME ..... **F:** 69 cu ft **R:** 51 cu ft

CAR AND DRIVER TEST RESULTS

ACCELERATION

ZERO TO	SECONDS
30 MPH	1.8
40 MPH	2.7
50 MPH	3.8
60 MPH	**5.0**

tested by ERIC TINGWALL *in Chelsea, MI*

eyes and mind are occupied with scanning the ground ahead for tell-tales of big humps, off-camber bends, and gnarly ditches and ruts. Things are happening so fast and in such oddly narrow confines that it sometimes feels as if you're playing one of the early Atari driving games, where the vehicle sits in the bottom center of the screen and you effectively drive the road around it.

Luckily, our quiet and quite pleasurable disassociation from reality came while driving a vehicle with 13 inches of front and 13.9 inches of rear wheel travel (up 1.8 and 1.9 inches, respectively) and fat Fox Racing dampers that could soak up most of the stuff our inexperienced eyes missed. Our co-driver, Folks, would chime in periodically with, "Man, this thing is really well set up." And he was right. It's softer and more compliant than the old Raptor, but handier and quicker and almost entirely unperturbed. A proper desert truck, in other words. And, yes, it jumps. Oh, how it jumps.

There is but one truck in the Raptor's class. Ford invented the factory desert-running full-size pickup with the first-generation Raptor and has been rewarded with a dedicated following and about as many sales as the company can handle. The SuperCab model starts at $49,520. Our test vehicle came with the $9345 Luxury package, which includes, well, just about everything. Here is an abbreviated list: heated and cooled leather-covered power front seats, push-button start, blind-spot warning, dual-zone climate control, integrated trailer-brake controller, power tilt/telescoping steering wheel, remote start, navigation, and the 4.10 front axle with a Torsen limited-slip differential. Ford also added the $1950 Technology package to our truck, which includes lane-keeping assist, automatic high-beams, rain-sensing windshield wipers, and adaptive cruise control.

[+] Jump up, jump up, and get down! Quick, indestructible . . . so far.
[–] The equivalent of a BMX bike, no need for the complicated 10-speed.
[=] Good enough to almost convince us to move to the desert. Almost.

A few other smaller options—forged beadlock-capable wheels ($1165), spray-in bed liner ($495), tailgate step ($375), and heated steering wheel ($155)—brought the total to $63,005. That's a lot of cash. But apparently not too much since Ford says that 91 percent of customers are ordering the even-pricier SuperCrew model and 90 percent are adding on the Luxury package.

Returning to Vegas with the truck and personnel entirely covered in dust, we didn't think that $63,000 seemed like too much to pay for the experience, or for something as unique and capable as the Raptor. After our time in the desert, we were perfectly willing to accept the occasional clunky shift from the new 10-speed and the bit of turbo lag as it rolls through town.

This truck is a dream.

70 MPH	6.5
80 MPH	8.4
90 MPH	10.8
100 MPH	**13.7**
ROLLING START, 5–60 MPH	5.7
TOP GEAR, 30–50 MPH	4.2
TOP GEAR, 50–70 MPH	4.0
1/4-MILE	**13.7 sec @ 100 mph**
TOP SPEED	107 mph (gov ltd)

HANDLING

ROADHOLDING, 300-FT-DIA SKIDPAD	**0.68 g**
UNDERSTEER	Excessive

BRAKING, 70-TO-ZERO MPH

SHORTEST STOP	**206 ft**
LONGEST STOP	211 ft
FADE RATING	None

WEIGHT

CURB	**5696 lb**
PER HORSEPOWER	12.7 lb
DISTRIBUTION	**F:** 55.5% **R:** 44.5%
CENTER-OF-GRAVITY HEIGHT	30.0 in
TOWING CAPACITY	6000 lb

FUEL

CAPACITY	26.0 gal
OCTANE	93 (recommended)
EPA COMBINED/CITY/HWY	16/15/18 mpg

INTERIOR SOUND LEVEL

IDLE	41 dBA
FULL THROTTLE	86 dBA
70-MPH CRUISING	68 dBA

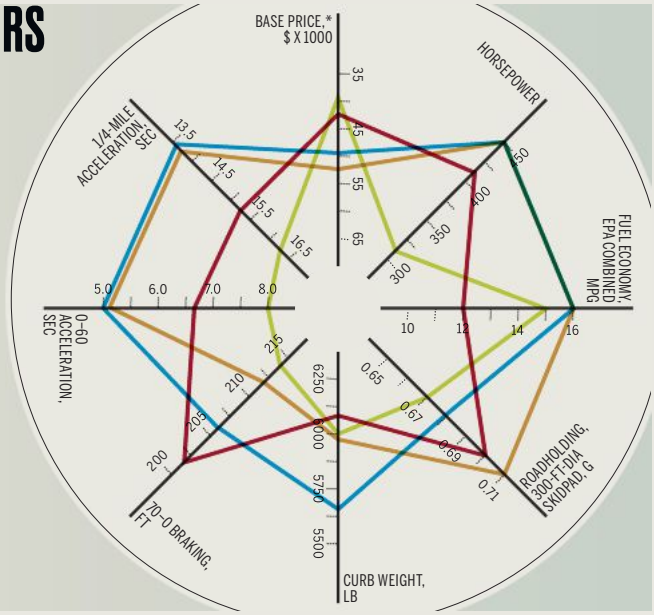
Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

COMPETITORS

One can only be compared to its previous self when in a class of one.
—

2017 F-150 RAPTOR SUPERCAB 3.5-L V-6, 10-SP AUTO
2017 F-150 RAPTOR SUPERCREW 3.5-L V-6, 10-SP AUTO
2010 F-150 RAPTOR SUPERCAB 6.2-L V-8, 6-SP AUTO
2010 F-150 RAPTOR SUPERCAB 5.4-L V-8, 6-SP AUTO

*Includes performance-enhancing options.



WeatherTech.com

Accessories Available for

Acura · Audi · BMW · Buick · Cadillac · Chevrolet · Chrysler · Dodge · Ferrari · Ford · GMC · Honda · Hummer · Hyundai · Infiniti Isuzu · Jeep · Kia · Land Rover · Lexus · Lincoln · Maserati · Mazda · Mercedes-Benz · Mercury · Mini · Mitsubishi · Nissan Oldsmobile · Plymouth · Pontiac · Porsche · Saab · Saturn · Scion · Subaru · Suzuki · Toyota · Volkswagen · Volvo · and more!

© 2017 by MacNeil IP LLC

WeatherTech®

Order Now: 800-441-6287

American Customers
WeatherTech.com

Canadian Customers
WeatherTech.ca

European Customers
WeatherTech.eu

Laser Measured FloorLiner™
Accurately and completely lines the interior carpet
Material provides soft touch top, rigid core strength and bottom surface friction
Available in Black, Tan, Grey and Cocoa for Select Applications.

All-Weather Floor Mats
Deeply sculpted channels designed to trap water, road salt, mud and sand
Will not curl, crack or harden regardless of temperature
Available in Black, Tan, Grey and Cocoa for Select Applications.

Accessories Available for

Acura · Audi · BMW · Buick · Cadillac · Chevrolet · Chrysler · Dodge · Ferrari · Ford · GMC · Honda · Hummer · Hyundai · Infiniti Isuzu · Jeep · Kia · Land Rover · Lexus · Lincoln · Maserati · Mazda · Mercedes-Benz · Mercury · Mini · Mitsubishi · Nissan Oldsmobile · Plymouth · Pontiac · Porsche · Saab · Saturn · Scion · Subaru · Suzuki · Toyota · Volkswagen · Volvo · and more!

Order Now: 800-441-6287

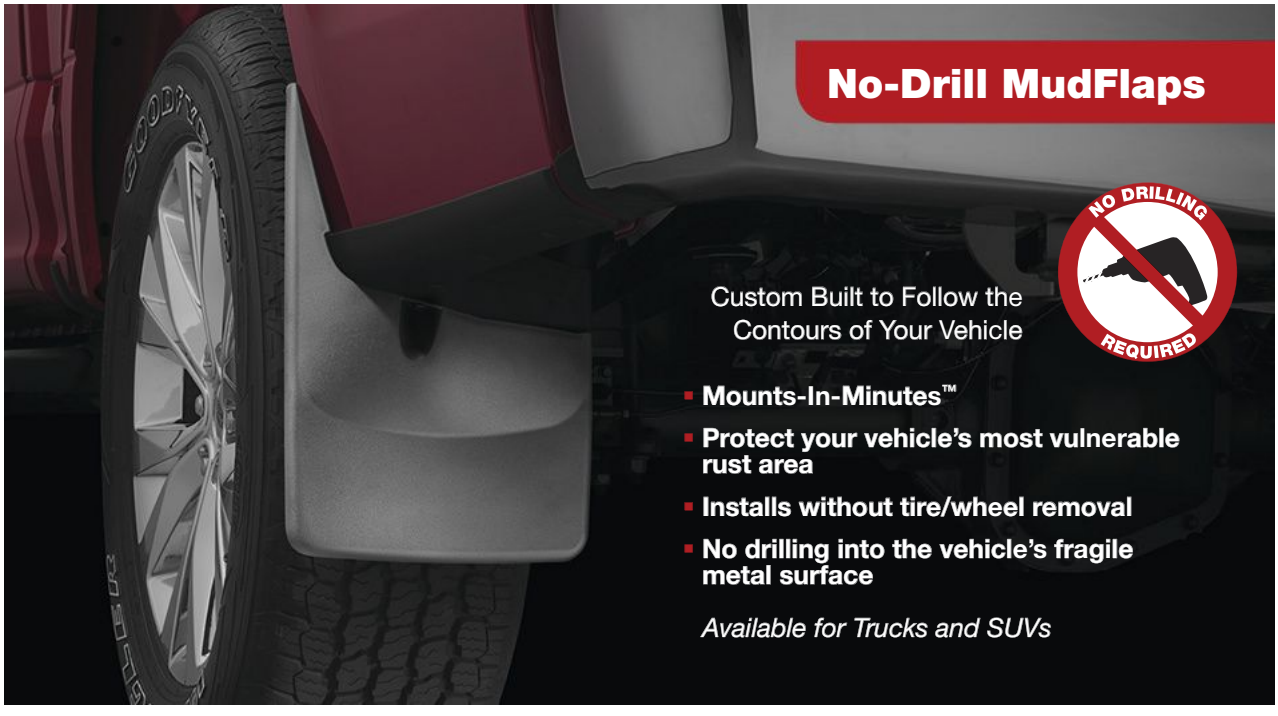
American Customers
WeatherTech.com

Canadian Customers
WeatherTech.ca

European Customers
WeatherTech.eu

© 2017 by MacNeil IP LLC

Cargo/Trunk Liner
Complete trunk and cargo area protection
Digitally designed for each application
Remains flexible under temperature extremes
Available in Black, Tan, Grey and Cocoa for Select Applications.


No-Drill MudFlaps
NO DRILLING
REQUIRED
Custom Built to Follow the Contours of Your Vehicle
Mounts-In-Minutes™
Protect your vehicle's most vulnerable rust area
Installs without tire/wheel removal
No drilling into the vehicle's fragile metal surface
Available for Trucks and SUVs

WeatherTech®
American Manufacturing *Done Right*™

Side Window Deflectors
Designed and Engineered in USA -
Handcrafted in Germany
Sleek, low profile design
Reduces wind noise and allows interior heat to escape

Accessories Available for

Acura · Audi · BMW · Buick · Cadillac · Chevrolet · Chrysler · Dodge · Ferrari · Ford · GMC · Honda · Hummer · Hyundai · Infiniti Isuzu · Jeep · Kia · Land Rover · Lexus · Lincoln · Maserati · Mazda · Mercedes-Benz · Mercury · Mini · Mitsubishi · Nissan Oldsmobile · Plymouth · Pontiac · Porsche · Saab · Saturn · Scion · Subaru · Suzuki · Toyota · Volkswagen · Volvo · and more!

Order Now: 800-441-6287

American Customers **WeatherTech.com**

Canadian Customers WeatherTech.ca

European Customers WeatherTech.eu

© 2017 by MacNeil IP LLC

CargoTech®
Cargo Containment System
Super grippy underside helps keep cargo in place
Works with WeatherTech® AVM® Cargo Mat, Cargo Liner or existing vehicle carpet or flooring

Hitch Mounted Bumper Protection
Protect your bumper from minor accidents
Fits standard 2" receiver hitch
Safely stand on the step (up to 300 lbs.) for everyday tasks
BumpStep®

WeatherTech®
American Manufacturing *Done Right*™

SIX YEARS LATER, WE DRIVE THE MULLIGAN BMW 5-SERIES THROUGH COASTAL PORTUGAL ONCE AGAIN.

BY ERIC TINGWALL
PHOTOGRAPHY BY CHARLIE MAGEE

It's not the 10Best loop, nor Virginia International Raceway where we hold our annual Lightning Lap, nor the 20 miles of highway between my driveway and the *Car and Driver* cube farm. But near the front of my mental card catalog of Roads I Know Well, there's a tangle of Portuguese pavement where the Atlantic Ocean rises to the Sintra Mountains.

I've hustled Porsches and Jaguars through here, and now a 2017 BMW 5-series from the new G30 generation. This car on these roads stirs nostalgia more than most drives, because it was from behind the wheel of its predecessor that I first discovered the Portuguese Riviera in 2010. For BMW to return here with the seventh-generation car feels a bit like taking a mulligan on that sixth gen.

M DR 6330

There are now something like six ways to control the 5-series's infotainment system. Oh, the new 5-series steers and rides better than the old car, too.

It was a fine car but an unexceptional BMW, moving the 5-series closer to the 7 and distancing it from cars such as the landmark E39 5er that gave definition to both the modern sports sedan and the brand itself.

My most recent visit to these roads was just nine months ago in the 5-series's chief rival, the Mercedes-Benz E-class. That car swallows highway miles whole, even as it has grown more adept at corner workouts. This time, our photographer requests that we shortcut the highway portion for a longer run on the good stuff. It proved to be the right call. As we put distance between ourselves and the Lisbon airport, the 5-series reveals itself as a competent cruiser, even if its driver-assist features are the kind of unhelpful nannies we prefer to switch off. Specifically, the lane-keeping-assist system, which offers a suggestive nudge to guide the driver's hands, won't follow even the slightest curve on its own. Maybe it's wishful thinking, but we take the limited progress on this front as a sign that BMW prefers human drivers to computers.

Between the updated engines, a familial restyling, and an evolved infotainment system, the 5 might read as a conservative redesign, or little more than a mid-cycle update, really. But this is an all-new model and what it lacks in new tech and splashy changes, it counteracts with more artful chassis tuning than its predecessor had.

We covered the most ground in a 540i M Sport, a six-cylinder package tailored both to our tastes and the 5er's character. There will inevitably be a plug-in hybrid, a V-8, a four-cylinder, and possibly a diesel, but this silken six is the (non-M) 5-series ideal. It delivers both right-now responses and hushed refinement to create the perfect blend of sport and luxury. The new, single-turbo 3.0-liter engine—don't ask us why BMW calls it the 540i, which once upon a more rational time denoted a V-8—makes 335 horsepower and 332 pound-feet of torque, up from an even 300 in both measures in the outgoing 535i. BMW claims it's good for a 0.7-second improvement in the 60-mph hustle. The only transmission, an eight-speed automatic, shifts with a perfectly calculated blip in torque delivery and the ready surge of the next gear.

BMW continues to offer the optional Integral Active Steering, which combines rear-wheel steering with a variable steering ratio up front, and which we loathed last time. But the old car used a planetary gearset in the steering column to actively vary the ratio based on a number of parameters, including vehicle speed. Dialing in a specific amount of lock didn't always net the same response, an uncertainty that we found unacceptable. The new 5 instead uses a simpler variable-ratio rack. The steering becomes quicker the more you wind the wheel, but turn after turn after turn, the car's reactions are always consistent. It's a significant distinction that translates into a much more predictable car.

The steering weight remains a touch light on-center, and the feedback is just as muted as we've sadly come to expect. At low speeds, the initial turn-in momentarily feels like a shopping cart with swiveling rear casters. It's a bit nonlinear and disorienting. Unfortunately, BMW didn't provide any cars in Portugal with the standard steering setup for comparison, so it's impossible to judge whether Integral Active Steering is a buy or a pass.

Even with the M Sport's lowered, stiffened suspension, the 5-series drives with slightly more relaxed wheel control and improved ride quality compared with its predecessor. It's helped by a roughly 100-pound mass reduction and what feels like more-supple run-flat tires. Whereas the outgoing car was a marathoner in steel-toed boots, this 5 lands with cushioned yet controlled

2017 BMW 5-SERIES

VEHICLE TYPE: front-engine, rear- or all-wheel-drive, 5-passenger, 4-door sedan
BASE PRICE: $53,000–$60,000 (est)
ENGINES: turbocharged and intercooled DOHC 16-valve 2.0-liter inline-4, 248 hp, 258 lb-ft; turbocharged and intercooled DOHC 24-valve 3.0-liter inline-6, 335 hp, 332 lb-ft
TRANSMISSION: 8-speed automatic with manual shifting mode

DIMENSIONS
WHEELBASE: 117.1 in
LENGTH: 194.6 in
WIDTH: 73.5 in
HEIGHT: 58.2 in
PASSENGER VOLUME: 99 cu ft
TRUNK VOLUME: 19 cu ft
CURB WEIGHT: 3800–4100 lb

PERFORMANCE (*C/D* EST)
ZERO TO 60 MPH: 4.8–6.0 sec
ZERO TO 100 MPH: 13.6–16.0 sec
1/4-MILE: 13.4–14.6 sec
TOP SPEED: 130–155 mph

FUEL ECONOMY
EPA COMBINED/CITY/HWY: 23–27/20–23/29–34 mpg (*C/D* est)

strides. Some of the cars on hand wore non-run-flat rubber and moved with an even gentler gait, although BMW hasn't confirmed whether that option will be available in the U.S.

When the 5-series goes on sale this month, the entry model will be a 530i with a 248-hp turbocharged four-cylinder. We weren't offered seat time in that car, but we did sample a 530d xDrive—an all-wheel-drive, six-cylinder diesel that is a possibility but not a certainty for the U.S. In the diesel there's a slightly lazy tip-in that feels more like pedal calibration than turbo lag, followed by a swell of thrust and admirably subdued noise and vibration.

The rote cosmetic work means larger headlights (with adaptive cornering lamps as standard) that butt up against larger kidney grilles, which now contain active shutters for the first time. To fend off criticism that the 5er is once again a 7-series rendered in size medium, BMW design chief Adrian van Hooydonk and his team pressed an additional pleat between the beltline and the crease that slashes through the door handles. This character line will reside exclusively on the 5-series, although it's subtle enough to be relatively ineffective in distinguishing the 5 from the 7.

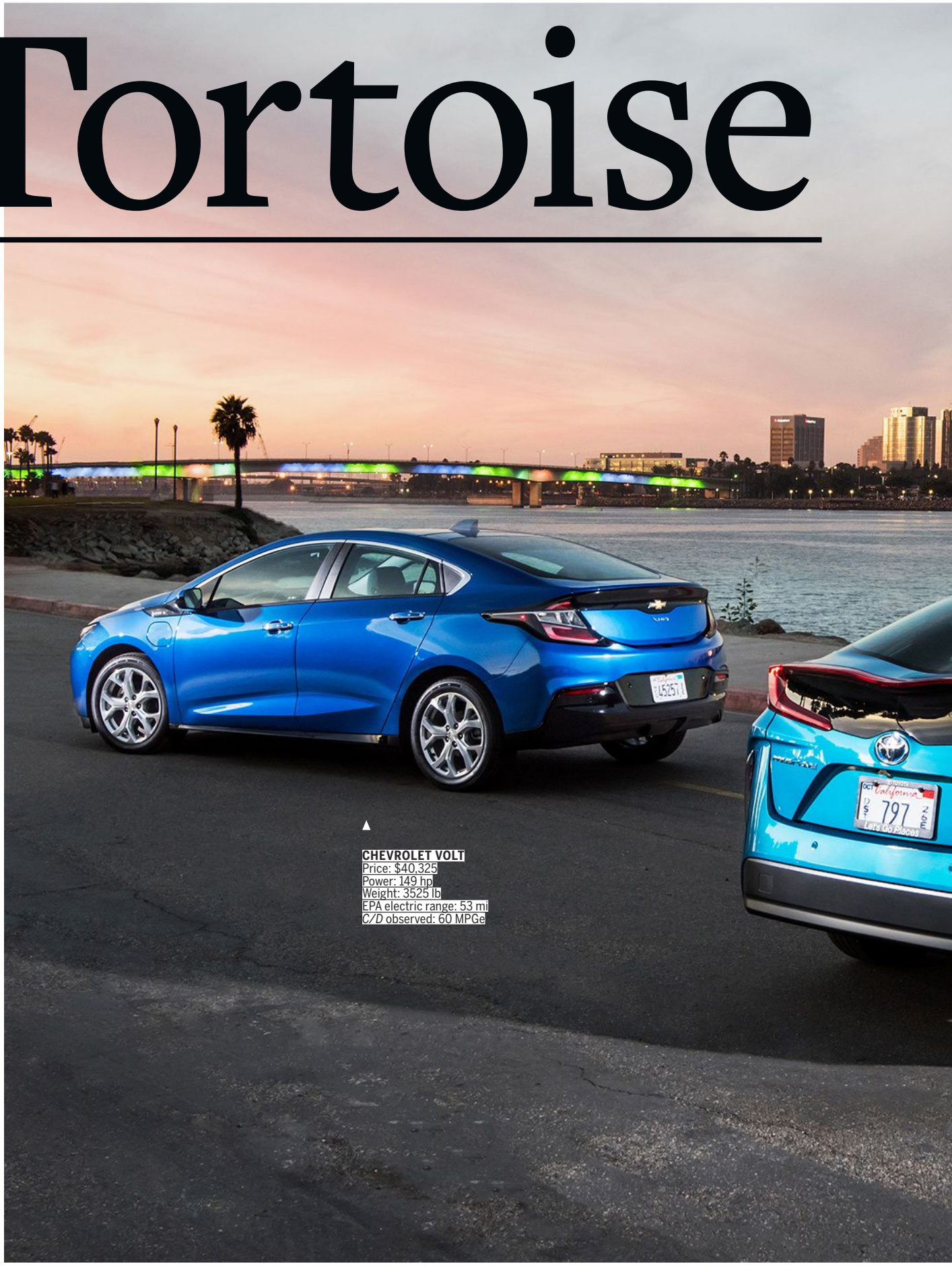
Inside, designers modernized the same theme introduced with the 2011 5-series. The iDrive 6.0 system includes a brilliant 10.3-inch display that doubles as a touchscreen, a 5-series first. That firmly positions BMW's infotainment system as the industry's most redundant. Certain features can now be controlled via steering-wheel buttons, center-stack audio controls, voice commands, hand gestures, and the iDrive knob (with its own touchpad on top). This, the Bop It! of infotainment systems, which you swipe, twirl, and thumb to activate, works better than you might expect. It proves intuitive to drag a finger to scan the map, then scroll through audio channels with the iDrive rotary, then adjust the volume via the steering wheel.

The cabin is impressively quiet, even more so because the 5-series does without acoustically insulated side glass. Also impressive is the way the optional 20-way multicontour seats morph from plush loungers into rib-hugging buckets thanks to inflatable bolsters.

Pricing should start in the low $50,000s for the 530i, with the six-cylinder 540i commanding around $60,000. Without compromising comfort or luxury, the newest 5-series pulls the middle-child BMW back toward the athletic virtues that once made the company unique. It's not a wholesale reawakening for the brand, but it's enough to stoke our nostalgia.

The Chris Bangle–era of nutty designs is long gone. BMW has retreated to making all its sedans look essentially alike. Behold the BMW Sedan, Size M.

Tortoise



CHEVROLET VOLT
Price: $40,325
Power: 149 hp
Weight: 3525 lb
EPA electric range: 53 mi
C/D observed: 60 MPGe

and the Hare

THE FIRST CHEVROLET VOLT CAME TO OUTRUN THE TOYOTA PRIUS. THE NEW ONE HOPES TO KILL IT. A TALE OF TWO PLUG-IN HYBRIDS _BY TONY QUIROGA

_ PHOTOGRAPHY BY JESSICA WALKER

TOYOTA PRIUS PRIME
Price: $33,965
Power: 121 hp
Weight: 3406 lb
EPA electric range: 25 mi
C/D observed: 52 MPGe

ELECTRIC VEHICLES ARE MATURING THROUGH THEIR ADOLESCENCE, AND JUST LIKE IN MIDDLE SCHOOL, SOME MEMBERS OF THE CLASS ARE DEVELOPING FASTER.

Tesla and Chevrolet now have electric cars that will travel more than 200 miles per charge, but the vast majority of battery-powered cars are still limited to a 60-to-90-mile range. In the next decade, the electric car promises to blossom into something that doesn't require sacrifices in practicality or price when compared with a gas-fueled car, but until the EV's pimples clear up, we have plug-in hybrids.

With both a battery and a gas tank, plug-in hybrids strive to be everything to everyone, especially buyers who drive too much to deal with range limitations or who don't want to spend much time plugged into a charger. The battery pack provides some electric-only operation while the gas tank and engine keep things moving when the battery is tapped. Chevrolet's first Volt could travel 38 miles on its battery; after that, the engine would kick on to drive the car. Toyota, the leader in hybrid sales, also sold a plug-in version of its ubiquitous Prius; it featured a lithium-ion battery pack and could travel 11 miles on electric-only power before burning any gas.

Man, it's ugly. Though the tortoise in this test, it looks like something you'd find lurking in the Mariana Trench. But its interior is roomy, airy, and well wrought.

Chevy and Toyota's plug-ins are now entering their second generation, and both offer greater electric-only range and improved performance. Chevrolet's Volt now has a larger, 18.4-kWh battery that weighs 21 pounds less than its predecessor's, uses fewer cells, and delivers more than 40 miles of EV range. Inside the transaxle are two motor/generators. While the combined gas and electric power output is unchanged from the previous Volt, GM's redesign of the motors and the gearbox increases efficiency and helps the new car shed 100 pounds.

When the battery reaches a predetermined low state in the Volt, the new aluminum-block 1.5-liter four with 101 horsepower starts up. This naturally aspirated engine runs in the Atkinson cycle for efficiency's sake and is lighter than the iron-block 1.4-liter it replaces. Even when the Volt switches to hybrid mode, the battery isn't completely depleted. By leaving some electricity in reserve, the electric motors can add to the four-cylinder's 101 horses to ensure that the Volt maintains the same 149 horsepower no matter the mode.

Toyota's second-gen plug-in Prius (rechristened the Prius Prime) follows the Volt's tack. Toyota doubled the battery capacity to 8.8 kWh, which more than doubles the range to 25 miles. The lithium-ion battery pack lives under the cargo area and powers the two electric motor/generators inside the transaxle, which can combine for 68 kW of output, or 91 horsepower. That's a far more useful number than the old Prius Plug-In's 51-hp electric-only effort.

When the juice stops flowing in the Prius Prime, a 1.8-liter Atkinson-cycle four with 95 horsepower makes its entrance. As in the Chevy, Toyota leaves some battery capacity in reserve to allow the electric motors to contribute to acceleration and support the gasoline engine. Unlike the Volt, though, the Prius Prime makes more power in hybrid mode than in EV mode, or 121 combined horsepower.

Although these plug-in hybrids are conceptually similar, the cars wrapped around the technology are vastly different. To help us dissect these differences and to see whose plug-in works better, we drove them together in stop-and-go Los Angeles traffic, on freeway slogs, and even into the canyons bordering the city. One emerged as a clear winner, both as something we'd like to drive and as an EV stopgap.

2. *Toyota Prius Prime*

Let's get something out of the way right up front: The Prius Prime is unattractive. How something so graceless, gawky, and odd emerged from a company as conservative as Toyota is shocking. Its design is so off-putting, it's almost an anti-car statement. Designers often draw inspiration from ordinary objects, or from architecture, nature, and so on. In Blue Magnetism paint—a metallic teal—the thing appears to have been inspired by a disfigured puffer fish, a turquoise ring you'd find in a New Mexico gas station, and a 1958 Edsel. Perhaps that's why the wind refuses to touch it. How else can you explain the Prius Prime's excellent 0.25 drag coefficient?

At least when you're in it, you can't see it. Hit the starter button, and the 11.6-inch center screen that looks like a smaller version of

2017 TOYOTA PRIUS PRIME [+] LULLS YOU INTO THE SLOW LANE, SOFT RIDE, LOTS OF BACK-SEAT SPACE. [–] ODDBALL DESIGN, LACKS THE VOLT'S EV RANGE, A TORTOISE ON THE ROAD, MINIVAN HANDLING. [=] SOMETIMES THE HARE WINS.

what's in a Tesla Model S lights up and shows a Prius driving around a sphere while speakers plunk a few welcoming piano notes, a tune that contributor John Pearley Huffman described as "Liberace-esque." Move the now-familiar Prius joystick into D and the Prius, with a full charge and in EV mode, pulls away with just enough poke to keep up with traffic.

Perched on the Prius's comfortable vinyl seats, we felt an airiness engendered by the hatchback's expansive windshield and tall side windows that read as a minivan's or SUV's panorama more than a car's. Look in the rearview mirror, and there are two panes of glass in the hatch that make parallel parking and backing up easier. The Volt isn't particularly difficult to see out of, but vistas abound in the Prius. The interior plastics have a pleasing grain, there's shiny piano-black trim, and a white panel that surrounds the hybrid-mode buttons and shifter nub breaks up the dark monotony. Sit in the Prius's back seat, and it feels larger than the Volt's, although the Prius Prime only has seatbelts for two in the back while the Volt can seat three across.

According to EPA measurements, the Prius has a big, nine-cubic-foot advantage in the cargo department, but judging by appearances, it's only marginally larger than the Volt's.

Using only the electric motors, the Prime hits 60 mph in 12.2 seconds. Merging onto a moving freeway proves to be a challenge, as it takes 8.2 seconds to go from 50 to 70 mph. When pressed to merge, the Prius Prime comes across as a big golf cart, which isn't what you want when you're aiming for a space between 18-wheelers.

It's not in a *C/D* editor's nature to slow down unless the radar detector goes off, but with so little speed to be had, the Prius Prime persuades you to drive it to maximize efficiency. So plan ahead, be gentle on the brakes to fully harvest regenerated electricity, and accelerate calmly. What's the rush, Fangio?

There are three levels of accelerator sensitivity: power, normal, and eco. It's best left in normal since power only gives false hope. Drive it as intended, and we found that it will go 22 miles on a full charge. Recharging it on a household 120-volt outlet with 8 amps of current takes about five hours; expect to halve that time on 240 volts.

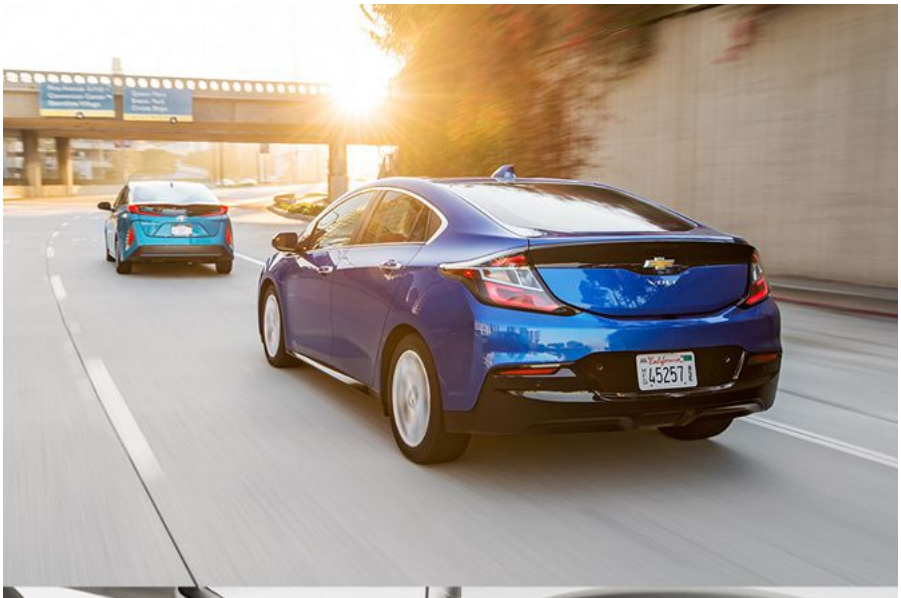
Hybrid mode can be manually selected to save the battery's charge for later, but it switches on automatically when the battery runs down or if speeds exceed 84 mph. With both power sources contributing, there's that additional 30 horsepower to be had. After two acceleration runs using only electric power, subsequent runs caused the engine to kick on between 50 and 60 mph to provide additional boost. Our EV acceleration numbers are from the first two purely electric runs. Acceleration improves when both power sources are humming along in hybrid mode, but this is still a slow car. In hybrid mode, the run to 60 mph takes 10.2 seconds versus the EV mode's 12.2, and the simulated freeway merge, represented here by our 50-to-70 run, is a still-leisurely 7.0 seconds.

	2017 CHEVROLET VOLT PREMIER	2017 TOYOTA PRIUS PRIME ADVANCED
PRICE AS TESTED	**$40,325**	**$33,965**
BASE PRICE	$38,445	**$33,965**
DIMENSIONS		
LENGTH	180.4 in	182.9 in
WIDTH	71.2 in	69.3 in
HEIGHT	56.4 in	57.9 in
WHEELBASE	106.1 in	106.3 in
FRONT TRACK	60.6 in	60.2 in
REAR TRACK	61.8 in	60.6 in
INTERIOR VOLUME	**F:** 52 cu ft **R: 38 cu ft**	**F: 53 cu ft** **R: 38 cu ft**
CARGO SPACE	11 cu ft	**20 cu ft**
POWERTRAIN		
MOTORS	2 synchronous permanent-magnet AC, 64 and 117 hp, 87 and 207 lb-ft	2 synchronous permanent-magnet AC, 31 and 71 hp, 30 and 120 lb-ft
BATTERY	liquid-cooled lithium-ion, **18.4 kWh**	air-cooled lithium-ion, 8.8 kWh
ENGINE	DOHC 16-valve Atkinson-cycle 1.5-liter inline-4, 101 hp, 103 lb-ft	DOHC 16-valve Atkinson-cycle 1.8-liter inline-4, 95 hp, 105 lb-ft
COMBINED POWER	**149 hp**	121 hp
LB PER HP	**23.7**	28.1
DRIVELINE		
TRANSMISSION	continuously variable	continuously variable
DRIVEN WHEELS	front	front
CHASSIS		
SUSPENSION	**F:** struts, coil springs, anti-roll bar **R:** torsion beam, coil springs	**F:** struts, coil springs, anti-roll bar **R:** control arms, coil springs, anti-roll bar
BRAKES	**F:** 10.9-inch vented disc **R:** 10.4-inch disc	**F:** 10.0-inch vented disc **R:** 10.2-inch disc
STABILITY CONTROL	fully defeatable, traction off	fully defeatable, traction off
TIRES	Michelin Energy Saver A/S 215/50R-17 91H M+S	Dunlop Enasave 01 A/S 195/65R-15 89S M+S

CAR AND DRIVER TEST RESULTS

ACCELERATION (ELECTRIC/HYBRID)		
0–30 MPH	**2.5/2.5 sec**	3.5/3.3 sec
0–60 MPH	**7.6/7.4 sec**	12.2/10.2 sec
0–100 MPH	**24.9/22.5 sec**	37.3/30.7 sec
1/4-MILE @ MPH	**16.0 sec @ 85/ 15.8 sec @ 88**	18.6 sec @ 72/ 17.7 sec @ 79
ROLLING START, 5–60 MPH	**7.9/7.4 sec**	12.9/10.2 sec
TOP GEAR, 30–50 MPH	**3.3/3.1 sec**	6.5/4.7 sec
TOP GEAR, 50–70 MPH	**5.2/4.3 sec**	8.2/7.0 sec
TOP SPEED	102 mph (gov ltd)	**115 mph** (gov ltd, *C/D* est)
CHASSIS		
BRAKING, 70–0 MPH	**180 ft**	184 ft
ROADHOLDING, 300-FT-DIA SKIDPAD	**0.81 g**	0.76 g
WEIGHT		
CURB	3525 lb	**3406 lb**
%FRONT/%REAR	59.9/40.1	55.5/44.5
FUEL		
TANK	8.9 gal	**11.3 gal**
RATING	87 octane	87 octane
EPA COMBINED/ CITY/HWY, BATTERY DEPLETED	43/42/42 mpg	**54/55/53 mpg**
***C/D* 150-MILE TRIP**	**60 MPGe**	52 MPGe
EPA ELECTRIC RANGE	**53 mi**	25 mi
***C/D* OBSERVED ELECTRIC RANGE**	**45 mi**	22 mi
SOUND LEVEL		
IDLE	30 dBA	**26 dBA**
FULL THROTTLE	**66 dBA**	71 dBA
70-MPH CRUISE	**67 dBA**	**67 dBA**

Tested by TONY QUIROGA *in California City, CA*



Potential Prius buyers might be willing to ignore the car's stodgy acceleration. After all, what consumers in this market are looking for is fuel economy, not style, certainly. And, while it can't quite match the Volt, the Prius Prime delivers reasonably good efficiency, achieving 52 MPGe overall.

Accept the lack of power and driving this hybrid is a laid-back experience. Only 67 decibels of noise come through at 70 mph, the steering is creamy and light, and the suspension is seemingly stuffed with goose down. Toyota equips the Prius Prime with 195/65R-15 Dunlop Enasave 01 A/S tires that were clearly chosen for their low rolling resistance and silent demeanor. Without much rubber on the road, the tires mustered only 0.76 g of road-holding, but the 184-foot stop from 70 mph isn't far off the Volt's 180-foot performance. The handling is minivan-like: soft, safe, and dull. On broken pavement, the suspension sends shudders into the structure that sound like a street performer drumming on a plastic bucket.

While the Prius Prime might not please those of us who love driving, Toyota's reputation for reliability and the Prius Prime's soothing driving experience will be compelling enough to win over fuel-obsessed buyers. Just don't drive a Volt after signing the paperwork.

1. Chevrolet Volt

There are some major differentiators between the Volt and the Prius Prime. First and foremost is the way the Volt drives. Judging by the Chevy's steering, brakes, and ride, it's clear that someone involved in the Volt's creation shares our values. The primary controls are suffused with accuracy and consistency. Clear feedback comes through the steering, the body roll is kept in check, the damping has the right dose of starch, and the structure stands up to any assaults from the road. The 403-pound battery that runs through the middle of the car lowers the center of gravity, keeping the car glued to the tarmac. Highway stability is excellent, and wind noise is minimal.

Driving made us believers. But handling isn't your priority, you say? Well, the Volt is also a better electric car than the Prius Prime.

2017 CHEVROLET VOLT [+] A BETTER EV, A BETTER HYBRID, BETTER HANDLING, BETTER LOOKS. [–] SMALL REAR SEAT, COSTS MORE. [=] THE BEST PLUG-IN HYBRID YET.

FINAL RESULTS

Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

	Maximum points available	Chevrolet Volt	Toyota Prius Prime
RANK		**1**	**2**
VEHICLE			
DRIVER COMFORT	10	**9**	8
ERGONOMICS	10	**9**	7
REAR-SEAT COMFORT	5	3	**4**
REAR-SEAT SPACE*	5	**5**	**5**
CARGO SPACE*	5	2	**5**
FEATURES/AMENITIES*	10	**10**	8
FIT AND FINISH	10	**8**	**8**
INTERIOR STYLING	10	**8**	5
EXTERIOR STYLING	10	**9**	4
REBATES/EXTRAS*	5	**2**	0
AS-TESTED PRICE*	20	16	**20**
SUBTOTAL	100	**81**	74
POWERTRAIN			
1/4-MILE ACCELERATION*	20	**20**	11
FLEXIBILITY*	5	**5**	**5**
FUEL ECONOMY*	10	**10**	6
ENGINE NVH	10	**9**	**9**
TRANSMISSION	10	**9**	8
SUBTOTAL	55	**53**	39
CHASSIS			
PERFORMANCE*	20	**20**	18
STEERING FEEL	10	**9**	7
BRAKE FEEL	10	**8**	**8**
HANDLING	10	**9**	5
RIDE	10	**9**	7
SUBTOTAL	60	**55**	45
EXPERIENCE			
FUN TO DRIVE	25	**20**	17
TOTAL	240	**209**	**175**

These objective scores are calculated from the vehicle's dimensions, capacities, rebates and extras, and/or test results.

The Volt's larger battery provided a 45-mile range and an overall efficiency of 60 MPGe in 150 miles of driving. A recharge takes about 10 hours on a normal household outlet, dropping to five on a 240-volt charger.

Sending electricity back to the battery when decelerating is made easy, too. Leave the shifter in D or L and pull the paddle behind the wheel to activate the most aggressive regeneration mode. Lift off the accelerator, and the motors rapidly decelerate the car while increasing the amount of electricity generated. It's so effective at erasing speed that the Volt becomes a single-pedal machine. Touching the brake pedal is only necessary for emergencies and coming to a complete stop. The Prius's B mode is conceptually the same, but it's not as aggressive; we found ourselves toeing for the brake pedal far more often in the Prius.

The Chevy is significantly quicker and more powerful than the Toyota, and the Volt's performance is essentially the same whether it's in EV or hybrid mode. A run to 60 mph takes only 7.6 seconds as an EV and 7.4 with the gas and electric power sources working together.

The Volt's interior makes this plug-in hybrid feel like a regular member of the GM family. So, thankfully, do the chassis and the powertrain.

Still not convinced? Take a long look at the Prius and the Volt. While the Volt might look a bit generic and too much like a Hyundai Elantra, at least it doesn't look like a protest against taste. Inside, the Volt is similarly conventional. We'd call it Malibu-plus for the way it mimics the approachability of a family sedan's interior. Gone is the first gen's capacitive touch switchgear; instead, you get real buttons. An eight-inch touchscreen is a familiar sight in GM cars and trucks, and it works well. Overly firm seats didn't impress, however, and although the rear seat theoretically can hold three, there's not much leg- or headroom back there. A small door opening makes getting in and out of the back seat difficult, too. For Uber duty, the Prius has the Volt licked.

Everywhere else, the Volt is the clear winner. It doesn't require any sacrifices in driving pleasure or performance in the name of economy. Its styling doesn't make an anti-car statement, and it certainly doesn't have a large back seat, but it's a more mature plug-in hybrid and a more satisfying car. The Volt qualifies for a federal tax credit that's $3000 more than the Prius Prime's ($7500 compared with $4502). That narrows but doesn't close the Toyota's price lead. We'd be happy to pay the extra money for the Volt. It's worth it.

TIRE RACK .com

Revolutionizing tire buying since 1979®

Exclusive Ice Rink TEST RESULTS

On the track, on the road, in the snow, or at the rink — our test results help you find the tire that's right for you! Access complete test reports or watch the videos to see the results for yourself!

www.tirerack.com/wintertestresults

Over 7,500 RECOMMENDED INSTALLERS

If you'd like, we can ship your order to your choice of one of our Independent Recommended Installers.

www.tirerack.com/installer

©2016 Tire Rack

800-981-3782

M-F 8am-8pm EST
SAT 9am-4pm EST

TIRE RACK .com

OVER 500 TIRE MODELS FROM 18 MANUFACTURERS

BFGoodrich · Bridgestone · Continental · Dick Cepek · Dunlop Tires · Firestone · Fuzion · General Tire · Goodyear · Hankook · Hoosier · Kumho Tire · Michelin · Pirelli · Riken · Sumitomo · Toyo Tires · Yokohama

THE RIGHT TIRE. THE RIGHT PRICE.

CUSTOMIZABLE SEARCH RESULTS

Use our price range selector to focus on tires within your budget, and then sort results by brand, price, and more.

SHIPPING QUOTES

Fast, efficient, nationwide delivery from one of our nine strategically located distribution centers.

BEST SELLERS

Check out the most popular options in your vehicle's size.

CONSUMER RATINGS AND REVIEWS

See what others say about specific tires, or get an opinion from those who drive the same vehicle as you.

TIRE & WHEEL PACKAGES

Arrive ready to bolt on and include all necessary hardware, free mounting and RoadForce balancing.

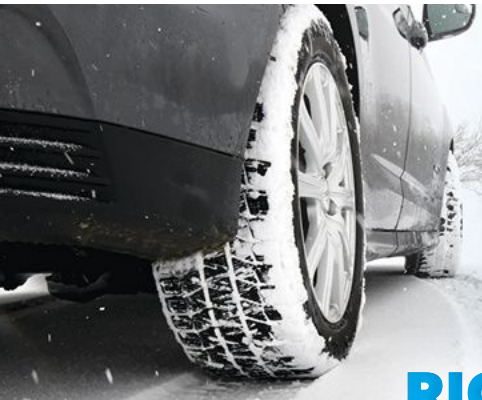
www.tirerack.com/packages

©2016 Tire Rack

800-981-3782

M-F 8am-8pm EST
SAT 9am-4pm EST

TIRE RACK .com



WINTER TIRES

Functional Footwear. For Your Vehicle.

FIND THE RIGHT WINTER TIRE FOR THE CONDITIONS YOU DRIVE IN

Call our sales specialists or shop by vehicle at www.tirerack.com/winter

BRIDGESTONE · Continental · DUNLOP TIRES · Firestone · GENERAL TIRE · GOODYEAR · MICHELIN · PIRELLI · YOKOHAMA.

READY-TO-BOLT-ON WINTER PACKAGES!

Tire Rack's Winter Tire & Wheel Packages make changing to winter tires easy and efficient. These high quality, vehicle-specific fitments arrive ready to bolt on your vehicle.

Packages include free scratchless mounting and free Hunter Road Force™ balancing. Plus, all necessary hardware is included at no additional cost!

SAMPLE PACKAGES

Build Your Own at www.tirerack.com/snow

'16 Hyundai Elantra GT
195/65R-15 Michelin X-Ice Xi3
15x6.5 Steel Wheels with Wheel Covers

'16 Cadillac ATS 2.0L Turbo AWD
225/45R-17 Bridgestone Blizzak WS80
17x7.5 Sport Edition P2

'17 A4 2.0T Quattro Premium
225/50R-17 Michelin X-Ice Xi3
17x7.5 Andros Spec L

'16 Ford F-150 4WD SuperCab
265/70R-17 General Grabber Arctic
17x8 Black Rock 937 Type 8P Steel

WHAT ABOUT TPMS?

If your vehicle is equipped with a direct tire pressure monitoring system, we can recommend wheels that are compatible with its sensors. An extra set of sensors is also available for most systems, and can arrive pre-installed on your package!

©2016 Tire Rack

800-981-3782

M-F 8am-8pm EST
SAT 9am-4pm EST

TIRE RACK .com

A HUGE SELECTION OF OVER 1,300 DIFFERENT WHEELS

O.Z. **Alleggerita HLT**
16 17 18

O.Z. **Leggera HLT**
18 19 20

O.Z. **Ultraleggera HLT**
19 20

O.Z. **45th Anniversary**
17 18

O.Z. **Aspen HLT**
20 21

O.Z. **Superturismo Dakar**
20 21

MSW **Type 48**
17 18 19 20

Advanti **FS Fastoso**
18 19 20

Advanti **Rasato**
17 18 19 20

Advanti DST **HY Hybris**
19 20

Bremmer Kraft **BR14**
18 19

Bremmer Kraft **BR15**
17 18

See Them on Your Vehicle!

Enter your vehicle at tirerack.com to experience one-click access to everything that fits it.

BBS **SR**
17 18 19

ANDROS **Spec L**
17 18

ANDROS **Spec S**
17 18

Monte Tl. **MT8 Ovella**
17 18 19

Monte Tl. **MT9 Cibriano**
17 18

What About TPMS?

We can assist you in selecting wheels that are compatible with your vehicle's sensors. We also offer an extra set of sensors for all TPMS systems, so your tire and wheel package can arrive with sensors already installed.

Enkei Perf. **ONX**
17 18 20

Enkei Perf. **PSR5**
15 16 17 18

Enkei Perf. **RSF5**
15 16 17 18

Enkei Tuning **TS-10**
17 18

Enkei Tuning **TY-5**
18 19

RADIUS **WI02**
16 17 18

RADIUS **WI16**
16 17

BRAKES akebono brembo Centric Parts dbaUSA GOODRIDGE HAWK STOPTECH

SUSPENSION BILSTEIN Eibach H&R HOTCHKIS SPORT SUSPENSION KW KONI KYB SACHS SPC PERFORMANCE ST WHITELINE

©2016 Tire Rack

800-981-3782

M-F 8am-8pm EST
SAT 9am-4pm EST

Ghost of the

◂ 2017 Maserati Levante S Q4

WITH THE LEVANTE SUV, MASERATI LOOKS THE PORSCHE CAYENNE IN THE EYE.

AND BLINKS.

_by Josh Jacquot _photography by Marc Urbano

White Dame

Maserati has been here before. Preserving soul-stirring brand values while managing the balance-sheet realities of being a tiny carmaker has never been easy. The last time this Modena-based brand pulled it off, however, was long before Lamborghinis went from sharing farm fields with bulls to being named after bulls. In 1957, Maserati was a builder of low-volume sports cars and even lower-volume race cars. Back then, it was also an independent concern, unencumbered by the burdens or blessings of its current parent company, Fiat Chrysler Automobiles. When its "White Dame" prototype rolled out that year, the Grand Tourer led the way for the series production 3500 GT—a volume seller (relatively speaking, with about 2200 made) introduced into a market ripe for its combination of Italian speed, sound, and flair.

Times have changed.

Moving the sales needle on a comparable scale in 2017 means selling a truck. Well, okay, an SUV. To be completely fair, the Levante, undergirded by the Ghibli sedan, is a car-based SUV. Though it expands the market appeal of that platform, it faces no shortage of competition in the world of upscale crossovers. In the past year, Bentley and Jaguar have folded to the allure of SUV sales at the risk of enthusiast cred. And in the next two years, Aston Martin and Lamborghini will join the club.

But an SUV, Italian or not, comes with certain practical expectations. We used the Levante accordingly, loading it with kids and bicycles and navigating Michigan's smooth gravel back roads and brutal tarmac two-lanes. In fact, it was on one such two-lane where we uncovered one of the Levante's more defining traits. Observing the busyness of its steering and spleen-splitting ride in sport mode, our eight-year-old daughter issued the most obvious question: "Daddy," she asked, "what happened to this thing?" Good question, kid.

The answer is twofold. First, Michigan happened. No two-lane in the heart of the Rust Belt survives more than a few years without measurable decay. Second, with its dampers in sport mode, the Levante is genuinely stiff; too stiff for Michigan, fine in California, and pretty good in northern Italy, where we first drove it last spring. Decoupling the powertrain from the stiffest damper setting improves ride quality without compromising engine response, but this is a tall wagon that feels so when driven with purpose. Our measurements confirmed the Levante's 26.5-inch center of gravity to be identical to the Jaguar F-Pace's and higher than that of a BMW X5 M and a Porsche Cayenne Turbo—contradicting Maserati's claim that it has the lowest center of gravity in the SUV class.

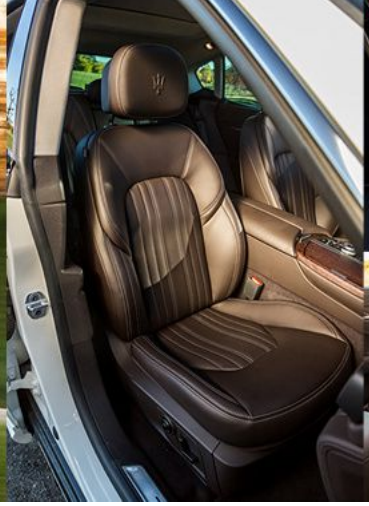
The Levante feels less carlike than it looks. Its high-ish center of gravity is everywhere felt, and even with its many tractive tricks, it never feels truly eager.

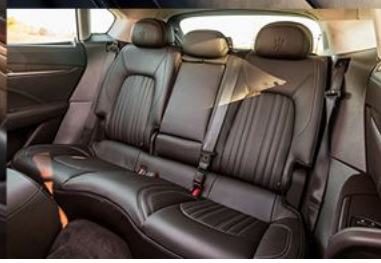
Computer-controlled air springs are standard and can raise or lower the Levante over a range of 3.4 inches. Six ride-height settings are available, depending on speed and drive mode. Though not obtrusive, the regular self-leveling is noticeable when the SUV is stopped.

The Levante's hydraulically assisted steering, though full of noise, never really sings. Requiring medium effort at speed, the steering system conveys ample vibration through the column, but there's little sense of the available grip, the road texture, or the approaching limits. This system proves that fantastic steering is less a product of hardware than it is of priorities. We'll gladly take a carefully tuned electrically assisted system over one that pumps fluid but doesn't communicate.

As priorities go, engine sound is one of Maserati's biggest. And the Levante makes its noises the old-fashioned way—it earns them. Paolo Dellachà, the Levante's chief engineer, proudly told us that the mill's harmonics are all natural. Spent hydrocarbons find their way to aural glory when bypass valves in the exhaust system fully open in sport mode. And it is, indeed, a raw, gratifying noise, reaching a 6200-rpm crescendo, then pausing ever so briefly as the next gear is loaded and fired.

The twin-turbo 3.0-liter V-6 in S-trim Levantes snorts out 424 horsepower and 428 pound-feet of torque. Though the V-6 is pressurized to the same peak boost (17.9 psi), new intake and exhaust designs differentiate it from the 404-hp version of the engine in the all-wheel-drive Ghibli S Q4. Power, though not in short supply, often materializes only after an unnerving delay. Catch the dinky V-6 off-boost, and all the throttle mashing you can muster won't produce meaningful motivation. Granting the turbos time to find purchase tried our patience on more than one occasion. Keeping the engine higher in the rev range by manually operating the gearbox—there's a dedicated button for this—prevents such delays.





The Maser is nicely packaged, with ample room front and rear. And it feels special inside, with aromas redolent of a Gucci warehouse.

The Levante has more than just corporate positioning in common with the old 3500 GT. ZF, the German supplier that made the GT's manual gearboxes all those years ago, now builds the Levante's eight-speed automatic transmission. Today, however, you'll row your own gears using column-mounted paddles with long, sleepy throws. Though revs are matched when lower gears are selected, aggressive downshifts are often denied.

The Levante's standard all-wheel-drive system is tuned to send torque to the front wheels when conditions merit via an electronically controlled clutch. Its handling, however, doesn't convey the rear-biased message since its front tires are easily overburdened during cornering. A clutch-type limited-slip differential operates on the rear axle in conjunction with a brake-based torque-vectoring system at both ends that slows the inner wheels in turns to rotate the SUV. In practice, it's a capable machine but not a terribly rewarding one, reinforcing the idea that as long as Porsche is in the SUV business, all comers need to bring their A game. Optional 20-inch (265 front/295 rear) Continental summer tires helped produce 0.91 g on the skidpad.

In the absence of launch control (it's not available) or any meaningful technique, the all-wheel-drive Levante finds 60 mph from a standstill in 5.1 seconds with a simple mash of the throttle and no wheelspin. It's fleet enough to not be embarrassing, but you needn't worry about blowing back the Pope's golden mitre. A 13.6-second quarter-mile at 105 mph is identical to Jaguar's less costly, less powerful, and smaller F-Pace's run. We also observed 18 mpg for the big cat versus the Levante's 15 mpg.

But this Italian's most likely analogue is the stoic Porsche Cayenne, which in GTS trim also offers standard air springs, all-wheel drive, and a turbocharged V-6. At 118.3 inches, the Levante's wheelbase is 4.3 inches longer than the Cayenne's, giving it roomy front and rear berths.

If being special in an Italian sort of way is to be Maserati's defining trait, then it has largely succeeded inside the Levante. Its

2017 MASERATI LEVANTE S Q4

PRICE

AS TESTED **$94,450**
BASE **$84,250**

VEHICLE TYPE: front-engine, all-wheel-drive, 5-passenger, 4-door hatchback
OPTIONS: Luxury package, $5000; Advanced Driver Assistance Plus package, $3000; 20-inch wheels, $1800; Climate package, $400
AUDIO SYSTEM: satellite radio; minijack, USB, media-card, and Bluetooth-audio inputs; Android Auto and Apple CarPlay interfaces; 14 speakers

ENGINE

twin-turbocharged and intercooled V-6, aluminum block and heads
BORE X STROKE ..... 3.41 x 3.33 in, 86.5 x 84.5 mm
DISPLACEMENT ..... 182 cu in, 2979 cc
COMPRESSION RATIO 9.7:1
FUEL DELIVERY SYSTEM: direct injection
TURBOCHARGERS ..... IHI RHF4
MAXIMUM BOOST PRESSURE ..... 17.9 psi
VALVE GEAR: double overhead cams, 4 valves per cylinder, variable intake- and exhaust-valve timing
REDLINE/FUEL CUTOFF ..... 6500/6500 rpm
POWER ..... **424 hp @ 5750 rpm**
TORQUE ..... **428 lb-ft @ 1750 rpm**

DRIVETRAIN

TRANSMISSION: 8-speed automatic with manual shifting mode
FINAL-DRIVE RATIO 2.80:1

ALL-WHEEL-DRIVE SYSTEM: full time with an electronically controlled clutch-pack center coupling, clutch-type rear differential

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	4.71	6.4	42 mph (6500)
2	3.14	9.6	62 mph (6500)
3	2.11	14.3	93 mph (6500)
4	1.67	18.0	117 mph (6500)
5	1.28	23.5	153 mph (6500)
6	1.00	30.3	164 mph (5400)
7	0.84	36.0	160 mph (4450)
8	0.67	45.2	155 mph (3425)

CHASSIS

unit construction with a rubber-isolated rear subframe
BODY MATERIAL: steel and aluminum stampings

STEERING

rack-and-pinion with electrohydraulic power assist
RATIO 15.8:1
TURNS LOCK-TO-LOCK 2.2
TURNING CIRCLE CURB-TO-CURB ..... 38.4 ft

SUSPENSION

F: ind, unequal-length control arms, air springs, electronically controlled variable dampers, anti-roll bar
R: ind; 2 lateral links, 2 diagonal links, and a toe-control link per side; air springs; electronically controlled variable dampers; anti-roll bar

BRAKES

F: 15.0 x 1.3-in vented, cross-drilled disc; 6-piston fixed caliper
R: 13.0 x 0.9-in vented, cross-drilled disc; 1-piston sliding caliper
STABILITY CONTROL ..... fully defeatable

WHEELS AND TIRES

WHEEL SIZE ..... **F:** 9.0 x 20 in **R:** 10.5 x 20 in
WHEEL CONSTRUCTION ..... cast aluminum
TIRES: Continental ContiSportContact 5 SUV
F: 265/45ZR-20 104Y **R:** 295/40ZR-20 106Y

EXTERIOR DIMENSIONS

WHEELBASE ..... 118.3 in
LENGTH ..... 197.0 in
WIDTH ..... 77.5 in
HEIGHT ..... 66.1 in
FRONT TRACK ..... 63.9 in
REAR TRACK ..... 66.0 in
GROUND CLEARANCE ..... 6.3–9.7 in
APPROACH ANGLE ..... 19.0–22.0 deg
BREAKOVER ANGLE ..... 24.0–26.0 deg
DEPARTURE ANGLE ..... 17.0–20.0 deg

INTERIOR DIMENSIONS

CARGO BEHIND ..... **F:** 57 cu ft **R:** 20 cu ft

CAR AND DRIVER TEST RESULTS

ACCELERATION

ZERO TO	SECONDS
30 MPH	2.0
40 MPH	2.8
50 MPH	3.9
60 MPH	**5.1**
70 MPH	6.5
80 MPH	8.1
90 MPH	10.0
100 MPH	**12.3**
110 MPH	15.0
120 MPH	18.2
130 MPH	22.7
140 MPH	28.3
150 MPH	36.1

tested by JOSH JACQUOT *in Chelsea, MI*

interior is embellished where the Cayenne's is antiseptic. It's emotive where the Cayenne is restrained. And it's just damned nice where, well, the Cayenne is nice. The aroma of leather permeates the cockpit, and its supple organic texture covers most every surface, including the dash and doors. The brown hides in our Levante were accented with stunning white stitching, front and rear. Open-pore wood-trim inserts complement the brushed-aluminum elements that form the sculpted door handles. Luciano Pavarotti, were he still belting it out at the Teatro alla Scala, would be at peace here for the commute home. The moment killer happens, however, with the observation that much of the Levante's switchgear is shared with relatively cut-rate Fiat Chrysler products.

The FCA influence is a mixed blessing. Maserati, left to its own devices, might have given us only stunning beauty in lieu of function. FCA, which brings economies of scale, had other ideas. The high-resolution infotainment screen, at 8.4 inches, looks great and is big enough to be genuinely practical. The system operates with a competent familiarity and best-in-the-business speed, and it now has a console-mounted dual-knob interface improving its usability. It did, however, freeze twice during our time with the Levante, locking its driver out of audio and ventilation controls. On both occasions, the system had to sit overnight to regain its wits.

[+] Bristling with Italian sights, sounds, and smells. [–] An engine that makes you wait, only good enough from behind the wheel, a whole lotta euros. [=] A tall, capable, and snarling means to performance-car ends.

In person, this SUV isn't what you'll assume it to be from photos. Its hips are wider and its canopy narrower than is revealed in two dimensions. A long snout coupled with its overall proportions, especially its profile, evokes visions of the last-generation Infiniti FX SUVs. There's a tall wagon-ness to it that precludes it from being either butch or elegant. But those are subjective claims to be adjudged personally.

The Levante is an enjoyable SUV with a stunning interior and a euphonic soundtrack. It breezes between corners capably and quickly and will only lose a drag race against the quickest SUVs made today. It isn't, however, the best-driving sport/luxury crossover you can buy—especially at its $94,450 as-tested price. That fee, after all, will buy a well-optioned Porsche Cayenne S. The real measure of the Levante will be its influence on Maserati as a whole. If it becomes a sales leader for the brand, and it easily should, it can be leveraged to push a heritage-rich carmaker to sports-car and sedan revival, Porsche-style. That's our hope, Maserati. *Capisce?*

ROLLING START, 5–60 MPH	6.2
TOP GEAR, 30–50 MPH	3.0
TOP GEAR, 50–70 MPH	3.6
1/4-MILE	**13.6 sec @ 105 mph**
TOP SPEED	164 mph (drag ltd, mfr's claim)

HANDLING

ROADHOLDING, 300-FT-DIA SKIDPAD	**0.91 g**
UNDERSTEER	Moderate

BRAKING, 70-TO-ZERO MPH

SHORTEST STOP	**151 ft**
LONGEST STOP	155 ft
FADE RATING	None

WEIGHT

CURB	**4982 lb**
PER HORSEPOWER	11.8 lb
DISTRIBUTION	**F:** 51.1% **R:** 48.9%
CENTER-OF-GRAVITY HEIGHT	26.5 in
TOWING CAPACITY	5952 lb

FUEL

CAPACITY	21.1 gal
OCTANE	91 (required)
EPA COMBINED/CITY/HWY	16/14/19 mpg
***C/D* OBSERVED**	**15 mpg**

INTERIOR SOUND LEVEL

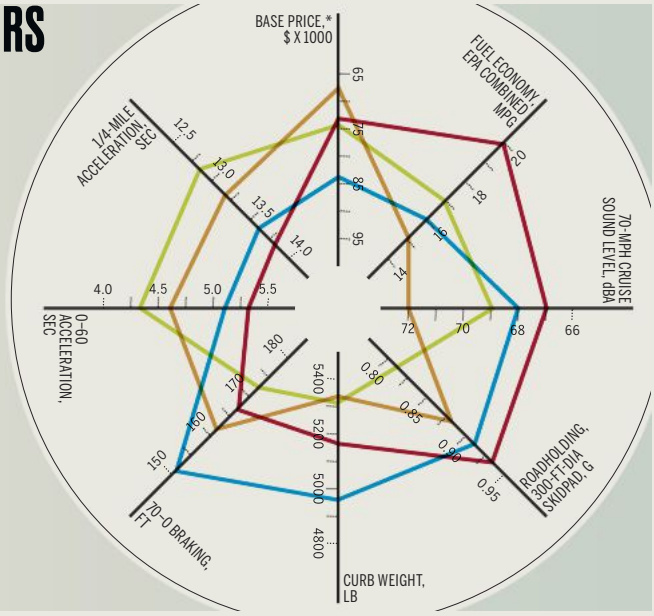
IDLE	51 dBA
FULL THROTTLE	79 dBA
70-MPH CRUISING	68 dBA

COMPETITORS

The Levante would rather turn than sprint, an unusual balance of traits in the world of hi-po crossovers.

JEEP GRAND CHEROKEE SRT
6.4-L V-8, 8-SP AUTO
MASERATI LEVANTE S Q4
3.0-L V-6, 8-SP AUTO
MERCEDES-AMG GLE43 COUPE
3.0-L V-6, 9-SP AUTO
BMW X5 xDRIVE50i
4.4-L V-8, 8-SP AUTO

*Includes performance-enhancing options.



Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

Nonstandardized Testing

Do not attempt to test your own vehicle. Here's how.

by Jeff Sabatini

photography by Roy Ritchie

Last year, the *Car and Driver* testing budget ran deep into six figures, and that's just for facility rentals. A complete test kit—including a Racelogic VBOX data logger, a timing gate, scales, and a sound-level meter—will set you back more than $25,000. And our Dunkin' Donuts receipts make that number seem small. The suits in New York actually pay us to go do this. We're professionals, after all.

You're not. But that doesn't mean you can't give DIY car testing a shot. Really, the only thing you have to risk is your driver's license. Maybe prison. Potentially your own life, as well as the lives of others. So don't try any of this under any circumstances.

Anyway, coming up with the numbers to fill out one of our test sheets will prove challenging. But we've figured out exactly how it can be done without climbing any proving-grounds fences or selling your expensive sports car to pay for test gear. Because then what would you test? Probably something like a Chevrolet Sonic RS, which is what we used.

FINDING A TEST TRACK

Let's start with the basics: Without access to a closed course, you have no choice but to take to the streets, which is dangerous and illegal. Our lawyers would prefer that you stop reading this now and just buy something from one of our advertisers. Like a radar detector. But we're getting ahead of ourselves.

You'll first need to locate a long, straight road (LSR) that's deserted. Roads like this are often in poor repair, and you want some nice level pavement—the smoother the better—because your LSR will be where you'll stage your main acceleration and braking tests. We cannot stress how important the LSR is, which is why we're referring to it with an abbreviation.

You have two methods available for scouting: drive around aimlessly or use

Google Earth. We chose the latter because we do enough of the former on comparison tests. Of course, once you've identified a few prospective LSRs, you'll still have to go drive them in person to gauge the quality of the pavement and monitor traffic.

The LSR we eventually settled on is a 0.9-mile service drive between an airport and a landfill. The surface is freshly paved, and fences on either side provide good insurance against hitting errant deer. For years, this particular stretch of road was actually the unofficial test track for one of our less-committed magazine competitors. Yes, that's right: Zoomy car magazines have a long and less-than-transparent history of using public roads to conduct acceleration and speed testing. (Even us: Dig into your stack of back issues and find June 2005; the story is "Mrs. Orcutt's Driveway.")

Find yourself an LSR (long, straight road) and go, man, go! Except don't. Leave it to the guys who wear Pilotis to weddings.

iTesting, uTesting, weallTesting

• The DIY approach
Apps: Ulysse Speedometer, Sound Meter
Cost: Free
Sorry iPeople, we chose smartphone apps on the Android platform to generate our DIY test results [see next page]. Ulysse Speedometer, a user-friendly multifunction display, monitored our acceleration. While we did get some accurate runs, a 1-Hz GPS refresh rate also returned inconsistent results. We used our smartphone stopwatch to record the roundabout lap times to determine grip. Our sound app measures dB rather than dBA like our high-end Brüel & Kjær meters.

• The Pro Method
Device: VBOX 3i
Cost: $16,000
Our go-to test unit, the 3i, samples GPS signals at 100 Hz to provide pinpoint accuracy, run after run. It can record up to 64 channels of data—including signals such as throttle position, engine rpm, and steering-wheel angle—from a vehicle's onboard computers. But it costs as much as a Chevy Sonic.

GEARING UP

Deserted stretches of tarmac have always played host to buried speedos, but testing requires more calculation. Taking a cue from the *Chicago Sun-Times*, which fired all its full-time staff photographers in 2013 and told its reporters to just snap pics with their phones, you can use a smartphone as your primary testing tool. It will need a stopwatch app, a sound-level app, a weather app, and an app to record acceleration. You have many choices here, far beyond the scope of this admittedly slapdash article. We used free apps [see sidebar] because we believe in offering you, our readers, maximum value. Have you noticed that our subscription price is less than it was 30 years ago? Why not take a moment to send in your renewal?

Of course, there are other ways of measuring performance. Maybe your car has built-in performance meters, or you run some sort of software on your laptop that interfaces with the OBD II system in your car. Quite possibly you have a laser measuring system. Or a military-grade GPS unit. Also a below-ground Y2K bunker where you keep the coordinates to the locations on your property where you've buried your gold. Good for you. Just, the next time you dig, renew that subscription, please.

WEIGHING IN

Your first test won't require any lawbreaking, merely the embarrassment of driving your sporty car onto the scales at a truck stop. You'll want to fill up first since we always test with a full tank of fuel. When we weigh cars at our office, it's free—ignoring the $4995 price of the Intercomp scales we use—but at our local truck stop it cost us $11 to weigh our car, with the scale recording total weight as well as front- and rear-axle weights. When we went inside to pay, we got a handy printout that included a Super Trucks Limited Edition collector card featuring a purple airbrushed semi.

The great thing about truck stops is that they're always open, so you can swing by on your way out to the LSR at night. This is also a good time to take some sound-level readings using the app on your phone. Take a measurement at idle and at wide-open throttle getting onto the freeway, and then set your cruise at 70 mph and take a third reading. Yes, you'll need to mute Ozzy's Boneyard for a few minutes and also turn off the air conditioning or heater, as we do.

STRAIGHT TALK

Testing during daylight hours is the sensible thing to do, but the cover of darkness will make things more exciting and also increase your chances of getting away with it. To that end, you

might want to find someone to come along and act as a lookout. Bribe them with a delicious and cost-effective fourthmeal. And bring that radar detector you bought in paragraph four.

Measuring zero-to-60-mph and quarter-mile times is fairly simple, so you'll want to do that first. Once you reach your LSR and confirm that you're alone, just zero your acceleration app, launch the car, and bury the throttle. Come to a stop and write down the results. Repeat. Or, now that we think about it, you might want to go to a drag strip for test-and-tune night instead. That's a much smarter approach.

We made several acceleration runs back and forth on our LSR without incident before we moved on to braking from 70 mph. Establish some sort of sign or landmark near enough to the road to use as your visible braking point, with enough distance in front of it to get up to speed and plenty of room beyond it to stop.

For this story, we orchestrated our braking measurements around a speed-limit sign, which is dangerous in that it diminishes plausible deniability. After coming to a stop, we leaned out of the car, marked a big X on the pavement with a piece of chalk, and then turned the car around to illuminate our measuring. Have the most athletic member of your team run one of those reel-type tape measures down to the sign, as it's going to be half a football field away. (For people who think saying "sportsball" is funny, that's 60 yards or 180 feet.)

At the proving grounds, we conduct six consecutive braking stops to evaluate fade and braking ability, but your own tolerance for risk should be taken into consideration here. By now you've been driving up and down this road long enough to attract attention.

This raises the question: "What do I do if the police come or someone stops to hassle me?" Your first line of defense is always to get the hell out of there. Also, hide this article. Being inoffensive and acting kind of stupid usually works pretty well, too. Our photographer says bringing along a camera and saying that you're just taking pictures of the moon works for him. We would strongly advise against claiming you write for a car magazine. That always backfires.

BIG BEN, PARLIAMENT

Remember when you used Google Earth to find your LSR? One of its useful features is that it also allows you to trace the exact dimensions of a piece of asphalt, which is going to come in handy when you scout around for a skidpad.

"What about parking lots?" you might ask. We initially thought this a good idea and had scoped out our local multiplex with hopes of using its standardized grid of parking spaces to assist in measurements. As perfect as this seemed from the satellite imagery, in reality it was neither big enough nor flat enough. And frankly, we find the tenacity of mall cops frightening. Did you see *Paul Blart: Mall Cop 2*?

Besides, with the growing numbers of new roundabouts being built in the U.S., there may be an abundance of ready-made skidpads within a short drive. We found several in our area. The thing about traffic circles is that they tend to be built in busy intersections. And with our goal of replicating our usual testing, which requires circling the pad in both directions to compensate for any side-to-side imbalance in the weight distribution, well, you can see the challenge.

We returned to our chosen roundabout-cum-skidpad more than once before we judged traffic to be sufficiently nonexistent to manage those clockwise circuits. We timed our laps by hand (we normally use an infrared timing gate), then we fed the average of the numbers into an online calculator along with the Google measurement, and the program spit back the Sonic's lateral grip. If you're the type of person who likes numbers and wants to do the arithmetic yourself, multiply your skidpad radius (half of the diameter, measured in feet) by 1.227 and divide by the lap time squared.

SPEAKING OF MATH

If you really, really like numbers, meaning you're the type of person who wastes time at work screwing around with Excel rather than Facebook, you can also go to the extreme of correcting all these measurements for weather, averaging runs in two directions, and subtracting rollout. We do such corrections on the official test numbers we print in the magazine. Just pop open the weather app on your phone before you commence testing at your LSR, record the temperature and barometric pressure, and then please, please find a new hobby because you are taking this one way too seriously.

In conclusion, you can see by the two spec panels that our do-it-yourself testing numbers came out relatively close to the official numbers we generated at the proving grounds. What does this prove? Fundamentally, that we were extremely lucky to have, once again, dodged jail.

Your mileage may vary.

2017 CHEVROLET SONIC RS

	OFFICIAL *C/D* TEST RESULTS	DIY TEST RESULTS
CURB WEIGHT	2821 lb	2840 lb
DISTRIBUTION (F%/R%)	62.7/37.3	62.7/37.3
SOUND LEVEL,		
AT IDLE	41 dBA	40 dB
AT WOT	78 dBA	79 dB
AT 70 MPH	70 dbA	66 dB
ZERO TO 60 MPH	7.8 sec	8.7 sec*
1/4-MILE	16.3 sec	15.7 sec*
BRAKING, 70–0 MPH	166 ft	163 ft
ROADHOLDING	300-ft-dia skidpad, 0.83 g	160-ft-dia skidpad, 0.82 g

**Inconsistent acceleration results from the app caused us to forgo the two-direction averaging we use in official results.*

The unidentified person below is, sadly, the most athletic man on our staff. He told us so. We made him run a lot with the tape measure to prove it.

WeatherTech®

American Manufacturing *Done Right*™

FloorLiner™
Provides “absolute interior protection™”
Laser measured to perfectly fit your vehicle
Has channels to carry fluids and debris to a lower reservoir
Material provides soft touch top, rigid core strength and bottom surface friction

See our full line of Automotive Accessories at WeatherTech.com

Hitch Mounted Bumper Protection

Accessories Available for

Acura · Audi · BMW · Buick · Cadillac · Chevrolet · Chrysler · Dodge · Ferrari · Ford · GMC · Honda · Hummer · Hyundai · Infiniti Isuzu · Jeep · Kia · Land Rover · Lexus · Lincoln · Maserati · Mazda · Mercedes-Benz · Mercury · Mini · Mitsubishi · Nissan Oldsmobile · Plymouth · Pontiac · Porsche · Saab · Saturn · Scion · Subaru · Suzuki · Toyota · Volkswagen · Volvo · and more!

Order Now: 800-441-6287

American Customers
WeatherTech.com

Canadian Customers
WeatherTech.ca

European Customers
WeatherTech.eu

© 2017 by MacNeil IP LLC

Return Engagement

Lincoln's premier nameplate is tanned, rested, and ready for another go as the brand's flagship.

by Don Sherman

_photography by Roy Ritchie

2017 Lincoln Continental Reserve 3.0T AWD

It was with some trepidation that we punched the start button on this Lincoln Continental road test. What if Lincoln revived its hallowed nameplate only because its own execs couldn't keep straight the alphabet soup of three-letter badges beginning with MK? What if this new flagship turned out to be another lightly fluffed Ford? What if this Conti is no better than the Taurus-based edition sold 20 years ago or it's a turkey like the Blackwood pickup that lasted exactly one model year?

Lincoln fans, especially those still pining for the Town Car, perk up at any mention of the Continental. While few remember that Edsel Ford's 1939 gift to automotive artistry reinterpreted two classic design features—long-hood, short-deck proportions and the spare tire as a fashion accessory—some surely recall the magnificent Mark II coupes that followed in 1956 and the elegant Kennedy-era Continental four-door hardtops and convertibles. On those rare occasions when Lincoln got the Continental right, it was the day's premier land yacht.

Now Lincoln's game is reprising fine design, premium interiors, and exemplary performance for prosperous customers beckoned by more than a dozen import and domestic makers. The U.S. is ground zero, with a few exports to China where the Lincoln brand still commands respect. After witnessing Audi, BMW, and

Mercedes bloody Cadillac in sales in the sports-sedan category, Lincoln is taking a pass on that fight for now.

Establishing exterior dimensions that are a touch grander in every direction than a Mercedes E-class's enabled Lincoln design chief David Woodhouse to sculpt the Continental with nicely flowing lines and voluptuous proportions. The new face of Lincoln is a Bentley-esque grille shared with the facelifted MKZ and slated to replace the bow-wave motif throughout the brand's lineup. Another lapse in creativity is the racetrack taillamp theme long used by Dodge and seen on both past and freshened MKZs.

At least there's beauty in the details. Substantial body forms and gentle creases showcase the Continental's wheels and tires. There are just enough badges and insignias to reveal this car's identity. Our favorite feature is the side-window trim finished in a polished-silver hue that neatly integrates thin mirror pedestals and substantial door handles with the beltline.

While skateboarders will surely be tempted to grab those inviting loops for a tow, their intended purpose is to elevate the entry experience. A light touch on their inside surface activates a microswitch that unlatches the door electrically. Spring pressure initiates the opening swing, and other mechanisms ease the final closing and latching effort. This ambitious reinvention of the door handle suggests that Lincoln may finally be serious about clearing the skepticism clouding this brand.

Interior designers took excellent advantage of the Continental's sprawling 117.9-inch wheelbase—five inches longer than the retired Lincoln MKS flagship's—to vault this mid-size luxury-sedan contender well into the EPA's large-car category. The headline feature is 30-way front-seat adjustability, a $1500 option that Lincoln unapologetically calls Perfect Position Seating. Fourteen door-mounted miniswitches, working in cahoots with the center touchscreen, let you slide, raise, inflate, and heat cushions and energize massage action to your heart's content. You can bear-hug your ribs for hard cornering and set thigh support at two different elevations to stimulate circulation. Grippy perforated leather upholstery, a steering wheel with proper thumb notches, and a perfectly executed dead pedal suggest that the driver's needs earned due consideration during the Continental's interior-design process. Rear-seat occupants enjoy the full limousine treatment with an elevated seating height, indulgent legroom, and a headliner contoured to accommodate the lankiest tycoon.

Unfortunately, other interior details land lower on the execution scale. The dash-top pad on our $66,535 Continental Reserve model was elegantly stitched and soft to the touch, but its coarse-grained surface looks more like molded rubber than animal hide. Wood accents are so brightly varnished that they're hard to distinguish from plastic. And glittering chrome frames throughout the interior hurl the mood back to the '60s. It's as if the Continental's interior designers followed a brief distinctly different from the one guiding their exterior colleagues.

A vertical shift-button array clears console space for two huge storage bins, a pair of cupholders, and a longitudinal slot that nicely accommodates the largest smartphone. Most of the bugs have been worked out of Ford's Sync 3 infotainment-management system, which can be commanded by voice or by tapping the appropriate spot on the eight-inch touchscreen. And there are nicely knurled knobs to control radio volume and tuning and the climate control system's fan speed. No all-thinking, all-knowing mouse is present to execute your bidding. Instead, there are tiny chrome toggles sprinkled about the center console and the steering wheel to set cabin temperature, cycle through display menus, and instruct the chassis and powertrain how to behave. And, while paddle shifters suggest that Lincoln is hip to the 21st century, the Continental's flimsy, molded-plastic levers feel like they came from the Focus's parts bin.

Because the original Continental was his baby, we photographed the current version at Edsel Ford's old digs in Grosse Pointe Shores, Michigan.

Instead of blessing Lincoln's flagship with the rear-/all-wheel-drive platform that the Continental nameplate deserves, strategists tapped the tried-and-true CD4 architecture—currently living under the Ford Fusion and Edge as well as the Lincoln MKX and Z—for another go. Component sharing is now such standard industry practice that it's hard to challenge Lincoln's parsimony while its annual volume barely tops 100,000 units, well below Cadillac's and less than one-third of what BMW, Lexus, and Mercedes-Benz each sell here. And, even though CD4 was launched for the 2013 model year, there's life left in these bones. Each time engineers develop a new application, they discover ways to refine the parts they started with.

In addition to significant length and width increases over its platform-mates, the Continental receives three corporate V-6 engines ranging from 300 horsepower to the potent 400 of the 3.0-liter twin-turbo in the six-speed-automatic, all-wheel-drive model tested here. While the top two engines are proud members of the EcoBoost (known internally as Nano) engine family, Lincoln will steer well clear of that nomenclature in customer communications.

Consistent with our mixed emotions concerning the Continental's interior and exterior designs, our driving and testing experiences wandered all over the enthusiasm map. The well-weighted, slack-free, and almost communicative steering is the best chassis

feature. Turning effort is thankfully high enough that *Lincoln Lawyer* Matthew McConaughey won't be steering this car with the bottom of his wrist. We also laud the tuning invested in this version of Lincoln's Continuously Controlled (electronic) Dampers. You can select comfort mode for a ride that verges on float, normal for good all-around behavior, or sport for attacking the mountain pass of your choice with competent and pain-free body- and wheel-motion control.

Switching modes requires tapping three different steering-wheel switches in proper sequence, but that pays off with moves that approach sports-sedan standards. Unfortunately, the Continental's 4555-pound curb weight, all-season Michelin Primacy radials, and intrusive stability-control system halt the cornering fun at only 0.84 g.

[+] Tasteful if familiar design, ample power, decent performance. [–] Interior diminished by poor choice of materials, excess brightwork, ergonomic flaws. [=] A second home team rises to the luxury-sedan call.

The Conti's 400 pound-feet of torque reporting for duty at 2750 rpm yields a 5.0-second-flat blast to 60 mph, matching a Cadillac CT6 with the twin-turbo 3.0-liter V-6 and easily blowing away the Lexus GS350, Mercedes-Benz E300 4MATIC, and the outgoing BMW 535i xDrive we've tested. The on-demand all-wheel drive seamlessly anticipates the need for maximum traction as your right foot nudges the accelerator and provides a comforting sense of security on wet pavement.

Unfortunately, an annoying throttle calibration and transmission hitches compromise the impressive urge. Stroke the gas pedal through the first third of its travel and this engine goes for broke, impeding smooth passing moves and keeping nothing in reserve. The six-speed transmission is reluctant to downshift, unable to hold gears at the redline, and fraught with sag-then-surge reactions when you crack the horsewhip. Another concern is not one whit of engine braking when you lift off and tap the paddle shifter for a lower gear.

While the Continental's numb left pedal is incommunicado

Certain design elements, such as the taillights, seem derivative. Others, such as the door handles (above), seem revolutionary.

2017 LINCOLN CONTINENTAL RESERVE 3.0T AWD

PRICE

AS TESTED **$66,535**
BASE **$60,105**
VEHICLE TYPE: front-engine, all-wheel-drive, 5-passenger, 4-door sedan
OPTIONS: Technology package, $3105; 30-way front seats, $1500; Revel audio system, $1130; Climate package, $695
AUDIO SYSTEM: satellite radio, USB and Bluetooth-audio inputs, Android Auto and Apple CarPlay interfaces, 13 speakers

ENGINE

twin-turbocharged and intercooled V-6, iron-and-aluminum block and aluminum heads
BORE X STROKE ..... 3.36 x 3.39 in, 85.4 x 86.0 mm
DISPLACEMENT ..... 180 cu in, 2956 cc
COMPRESSION RATIO 9.5:1
FUEL DELIVERY SYSTEM: direct injection
TURBOCHARGERS ..... BorgWarner
MAXIMUM BOOST PRESSURE ..... 16.7 psi
VALVE GEAR: double overhead cams, 4 valves per cylinder, variable intake- and exhaust-valve timing
REDLINE/FUEL CUTOFF ..... 6200/6000 rpm
POWER ..... **400 hp @ 5750 rpm**
TORQUE ..... **400 lb-ft @ 2750 rpm**

DRIVETRAIN

TRANSMISSION: 6-speed automatic with manual shifting mode
FINAL-DRIVE RATIO 3.39:1
ALL-WHEEL-DRIVE SYSTEM: full time with torque-vectoring twin rear-axle clutch-pack couplings

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	4.48	5.3	32 mph (6000)
2	2.87	8.3	50 mph (6000)
3	1.84	13.0	78 mph (6000)
4	1.41	16.9	101 mph (6000)
5	1.00	23.9	143 mph (6000)
6	0.74	32.4	147 mph (4550)

CHASSIS

unit construction with 2 rubber-isolated subframes
BODY MATERIAL: steel and aluminum stampings

STEERING

rack-and-pinion with variable ratio and variable electric power assist
RATIO 11.5–19.5:1
TURNS LOCK-TO-LOCK 2.1–3.4
TURNING CIRCLE CURB-TO-CURB ..... 42.0 ft

SUSPENSION

F: ind, strut located by a control arm, coil springs, 3-position electronically controlled dampers, anti-roll bar
R: ind; 1 control arm, 1 lateral link, and a toe-control link per side; coil springs; 3-position electronically controlled dampers; anti-roll bar

BRAKES

F: 13.6 x 1.3-in vented disc, 2-piston sliding caliper
R: 12.4 x 0.4-in disc, 1-piston sliding caliper
STABILITY CONTROL ..... traction off

WHEELS AND TIRES

WHEEL SIZE ..... 8.0 x 19 in
WHEEL CONSTRUCTION ..... cast aluminum
TIRES: Michelin Primacy MXM4 255/45R-19 100V M+S

EXTERIOR DIMENSIONS

WHEELBASE ..... 117.9 in
LENGTH ..... 201.4 in
WIDTH ..... 75.3 in
HEIGHT ..... 58.5 in
FRONT TRACK ..... 63.2 in
REAR TRACK ..... 64.1 in
GROUND CLEARANCE ..... 4.8 in

INTERIOR DIMENSIONS

SAE VOLUME ..... **F:** 59 cu ft **R:** 50 cu ft
TRUNK ..... 17 cu ft

CAR AND DRIVER TEST RESULTS

ACCELERATION

ZERO TO	SECONDS
30 MPH	1.7
40 MPH	2.6
50 MPH	3.6
60 MPH	**5.0**
70 MPH	6.4
80 MPH	7.9
90 MPH	9.8
100 MPH	**12.0**
110 MPH	14.4
120 MPH	17.9
130 MPH	21.9
140 MPH	26.7

tested by DAVID BEARD *in Chelsea, MI*

concerning the vented-front, solid-rear disc-brake system's activity, it will halt this hefty four-door from 70 mph in 170 feet with minimal fade during repeated stops. All the aforementioned competitors, each hundreds of pounds lighter, beat that performance save the BMW 535i, which is a close match. Rivals also top this Lincoln's 0.84-g cornering grip, some by a little, some by a lot.

The new Genesis G90 powered by the twin-turbo V-6 strikes us as the Continental's soul mate. Both these flagships deliver comparable—occasionally even impressive—performance with loudly unspoken sports-sedan aspirations.

Decent sales while the supply pipeline is still filling confirm that the Continental does appeal to Lincoln's traditional supporters. But forgive us for mentioning the untapped potential we believe is buried deep within the Continental's soul. A diet regimen, fixes for the ergonomic lapses, and a stability system reprogrammed to take advantage of the already optional 20-inch summer tires could move this Lincoln in our direction. While Lincoln has repeatedly stressed that the Continental isn't engineered or tuned to attack the incumbent European sports sedans, this car clearly tops the brand's past efforts. We're convinced that a slight change in focus and another stab at tuning could produce the first Continental that's truly at home in a car enthusiast's driveway.

ROLLING START, 5–60 MPH	5.5
TOP GEAR, 30–50 MPH	2.7
TOP GEAR, 50–70 MPH	3.6
1/4-MILE	**13.5 sec @ 106 mph**
TOP SPEED	147 mph (gov ltd)

HANDLING

ROADHOLDING, 300-FT-DIA SKIDPAD	**0.84 g***
UNDERSTEER	Moderate

BRAKING, 70-TO-ZERO MPH

SHORTEST STOP	**170 ft**
LONGEST STOP	173 ft
FADE RATING	None

WEIGHT

CURB	**4555 lb**
PER HORSEPOWER	11.4 lb
DISTRIBUTION	**F:** 58.9% **R:** 41.1%
CENTER-OF-GRAVITY HEIGHT	22.5 in
TOWING CAPACITY	0 lb

FUEL

CAPACITY	18.0 gal
OCTANE	93 (recommended)
EPA COMBINED/CITY/HWY	19/16/24 mpg
C/D OBSERVED	**17 mpg**

INTERIOR SOUND LEVEL

IDLE	37 dBA
FULL THROTTLE	73 dBA
70-MPH CRUISING	67 dBA

*Stability-control inhibited.

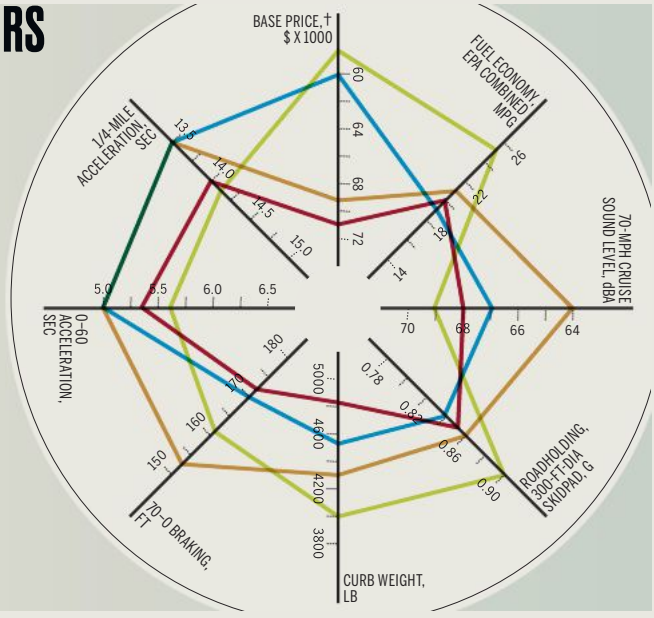
Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

COMPETITORS

The Continental follows the Bentley philosophy of luxury: cushy and isolated, but plenty quick in a straight line.

CADILLAC CT6 3.0T AWD
3.0-L V-6, 8-SP AUTO
GENESIS G90 3.3T HTRAC
3.3-L V-6, 8-SP AUTO
LINCOLN CONTINENTAL 3.0T AWD
3.0-L V-6, 6-SP AUTO
VOLVO S90 T6 AWD
2.0-L I-4, 8-SP AUTO

†Includes performance-enhancing options.



Alfa Bits

Refusing to live in the Quadrifoglio's shadow is what the 2.0-liter **Giulia** does best.
_by Tony Quiroga

ITALIAN-NESS. We know it when we see it. And when we don't, we're usually in an Olive Garden.

We see lots of Italian-ness in Alfa Romeo's new Giulia sedan; it's clear that Alfa didn't order parts for it from Chrysler's menu. If it did, the Pentastar stuff is well hidden. From what we could see, nothing inside the new Giulia's cabin is shared with a domestic Chrysler, Dodge, or Jeep. The infotainment system is the Giulia's own, and although the switchgear has a generic European look and some of the plastics are from the hard-and-cheap bin, everything inside appears to be Giulia-specific. What's even better is that the engines are made and designed in Italy.

Alfa Romeo is offering U.S. customers two engines when the car goes on sale early this year. The 505-hp engine is a twin-turbocharged 2.9-liter V-6. Derived from the Ferrari California T's 3.9-liter V-8, the Alfa engine is odd in that it's a 90-degree V-6 without a balance shaft to quell vibration created by the inherently unbalanced configuration. Alfa Romeo engineers tell us they wanted the slightly raucous sound produced by the 90-degree six. Its voice is a bit hoarse and snarly, but it doesn't have to rely on piped-in noise to fill the cabin with engine sounds. I'm not supposed to review that version, but it's hard to resist talking about the Quadrifoglio again even though we said almost the same things about it earlier ["Is the Wait Finally Over?" August 2016]. It's that good. [*Quiroga, get back to the slower Giulias—Ed.*]

The four-cylinder Giulia has a 2.0-liter turbocharged engine, and it will sell in far greater numbers than the Quadrifoglio. Alfa tells us that the 2.0-liter is all-new. We find it curious that this cast-aluminum, 16-valve engine has only one camshaft, employing the crafty MultiAir variable-valve-lift system. Yet it makes 280 horsepower and 306 pound-feet of torque. Criminally, it comes to the States paired only with an eight-speed automatic transmission. Automatics are the norm for this segment, but Alfa Romeos are a protest against normal. A stick-shift version would be consistent with the brand and, you know, Save the Manuals!

The 2.0-liter radiates spirit, even after a drive in the Quadrifoglio. While Alfa's engine lacks the smooth and rev-happy character of the turbo four-cylinders from Audi or BMW, this one sounds grittier and

[+] Instant and connected steering, excellent ride, *autentico Italiano.*
[–] No manual transmission available, cramped back seat.

AUTO ANYTHING℠

THE LAST AIR FILTER YOU'LL EVER BUY!

K&N AIR FILTERS

The washable and reusable pleated and oiled cotton gauze filtration medium runs up to 50,000 miles between cleanings, depending on highway conditions. Backed by a 10-year / 1,000,000 Mile Warranty. Installs in minutes.

FROM $34.99

"AMAZING FILTERS!"

"K&N are the best filters on the market. I wouldn't use anything else. The first thing I do when I buy a new truck is order a K&N Filter for it. Thanks K&N!!"
- Lewis W. (West Haven, UT)

MORE POWER & TORQUE!

FROM $163.99

K&N COLD AIR INTAKES*

Boost power and torque with a K&N Cold Air Intake. Custom-engineered with the famous K&N Filtercharger cone filter and power-tuned intake tract. Backed by a 10-year / 1,000,000 Mile Warranty. Easy installation.

*Street legal in most states. Some intake systems are not legal for use on certain vehicles in California or other states adopting CA emission standards. See online for CARB status on each part for a specific vehicle.

EXPERIENCE MONSTROUS POWER & SOUND!

CUSTOM EXHAUST SYSTEMS

Ditch your restrictive stock pipes and move up to a powerful performance exhaust system. Big power gains, a throaty growl and improved fuel economy-that's what a performance exhaust system delivers. And, each system is custom-bent for your exact year, make and model.

FROM $216.95

MUFFLERS	FROM $33.95
CATALYTIC CONVERTERS	FROM $62.95
HEADERS	FROM $131.95
EXHAUST SYSTEMS	FROM $216.95

FLOWMASTER · GIBSON PERFORMANCE EXHAUST · borla PERFORMANCE INDUSTRIES · CORSA PERFORMANCE EXHAUSTS · MBRP INC. PERFORMANCE EXHAUST · mf

INCREASE YOUR STOPPING POWER WITH HAWK BRAKES!

HAWK HPS 5.0 SECTOR 27 BRAKE KIT

This brake kit is intended for those of you who drive your street ride a little harder than the typical road warrior. Take your lane with confidence knowing you can stop on a dime when you upgrade your braking game with a Hawk Sector 27 HPS 5.0 Brake Kit.

HAWK

PROTECT YOUR FLOORS FROM MUD & SPILLS!

FROM $54.90 PR.

PROZ FLEXOMATS FLOOR MATS

FROM $99.99 PR.

HUSKY LINERS CUSTOM FLOOR LINERS

SAFEGUARD YOUR SEATS! HUGE SELECTION ONLINE.

FROM $259.99 ROW

CUSTOM LEATHERETTE SEAT COVERS

FROM $179.99 ROW

CUSTOM NEOPRENE SEAT COVERS

FIGHT WINTER HEAD ON! VISIT AutoAnything.com FOR OUR COMPLETE SELECTION OF DRIVING ACCESSORIES.

FROM $112.20

SKI & SNOWBOARD RACKS

Be ready to hit the slopes with a ski/snowboard rack. Choose from the worlds top brands.

FROM $34.99

WINDSHIELD SNOW COVERS

Forget about scraping frost, ice and snow from your windshield with a convenient snow cover.

FROM $73.16

CABLE SNOW CHAINS

Stay safe and drive with confidence this winter. Excellent traction and low profile design.

FROM $1,145.00

SNOW PLOWS

Tired of shoveling the driveway? Never let snowfall hold you hostage again. Easy to operate.

AutoAnything.com | 888.686.5870

FREE SHIPPING NO HIDDEN FEES

1-YEAR PRICE GUARANTEE ALL PRICES BACKED FOR A FULL YEAR FROM PURCHASE

© 2016. AutoAnything, Inc. All Rights Reserved. AutoAnything is a registered mark of AutoAnything, Inc. All other marks are the property of their respective owners. Prices subject to change. Some restrictions apply. See website for complete details and restrictions.

angrier and provides good thrust. A twin-scroll turbo works to minimize lag, and Alfa claims a zero-to-60-mph time of 5.1 seconds with the standard rear-wheel drive and optional all-wheel drive alike. The latter is denoted by a Q4 badge that, in one example of possible parts sharing, looks an awful lot like the one that Maserati sticks to the back of its Ghibli.

The ride quality is excellent on the optional 18-inch wheels, and the structure is as solid as any in the segment. But what really sets the Alfa Romeo apart from the competition is its steering. A crazy-quick rack with an 11.8:1 ratio and only 2.3 turns lock-to-lock provides responsiveness as well as intuitive feedback and road feel. Alive and graced with some of the rawness of the 4C sports car, the Giulia steers with the precision and purity from which BMW has retreated and which Audi and Mercedes-Benz have yet to realize. In the Giulia's segment, the Cadillac ATS's steering comes closest.

Unfortunately, the ATS also seems to have been Alfa's bogey in rear-seat space. Next to the 3-series and the A4, the Alfa's back seat lacks legroom. The front-seat occupants enjoy more space, and a relatively low cowl provides a clear view ahead. We found the front seats in four-cylinder models to be overly firm, and the seat bottom is way too short for proper thigh support. Trunk space appears to

▲

"ALIVE AND GRACED WITH SOME OF THE RAWNESS OF THE 4C SPORTS CAR, THE GIULIA STEERS WITH THE PRECISION AND PURITY FROM WHICH BMW HAS RETREATED."

Italian sculpture

UNDER THE SKIN

The basis for the new Giulia is Alfa Romeo's Giorgio platform. Engineered in Italy at a cost of more than $1 billion, the rear- and all-wheel-drive architecture will also underpin Alfa's upcoming Stelvio SUV [see "Twisty Sister," page 013]. It is expected that parent company FCA may also adapt the Giorgio platform for the next-generation Dodge Charger and Challenger, which are expected to arrive in 2020.

2017 ALFA ROMEO GIULIA

VEHICLE TYPE: front-engine, rear- or all-wheel-drive, 5-passenger, 4-door sedan
BASE PRICE: $40,000 (est)
ENGINE TYPE: turbocharged and intercooled SOHC 16-valve inline-4, aluminum block and head, direct fuel injection
DISPLACEMENT: 122 cu in, 1995 cc
POWER: 280 hp @ 5250 rpm
TORQUE: 306 lb-ft @ 2000 rpm
TRANSMISSION: 8-speed automatic with manual shifting mode

DIMENSIONS

WHEELBASE: 111.0 in
LENGTH: 182.6 in
WIDTH: 73.7 in
HEIGHT: 56.5–57.1 in
CURB WEIGHT: 3400–3500 lb

PERFORMANCE (*C/D* EST)

ZERO TO 60 MPH: 5.1–5.2 sec
ZERO TO 100 MPH: 13.5–13.6 sec
1/4-MILE: 13.8–13.9 sec
TOP SPEED: 130 mph

FUEL ECONOMY

EPA COMBINED/CITY/HWY: 25–27/21–22/32–33 (*C/D* est)

Properly optioned, the four-cylinder Giulia looks nearly as spicy as its 505-hp sibling, the Quadrifoglio. The interior is clean and handsome, if a bit tight.

be in line with the competition, but the opening is so small that loading and unloading suitcases becomes like that old, maddening board game Operation.

Alfa Romeo hasn't announced pricing, but we're expecting the base Giulia to start around $40,000, with a fully loaded all-wheel-drive edition cresting $50,000. Base versions come well equipped with leather seats, bixenon headlights, LED taillights, dual exhaust, two-zone automatic climate control, four-piston front brake calipers, a six-way power driver's seat, parking sensors, a rearview camera, and a proximity key with push-button start. Moving up to the Ti trim level adds heated front seats, a larger (8.8-inch) touchscreen, wood dashboard trim, and 18-inch wheels.

While the differences between the base Giulia and the Ti are minor, opting for the Ti allows for the addition of the Lusso package, which brings softer leather seats, different wood trim, and Lusso-specific 18-inch wheels. We found the available Sport package more compelling. It gives both the base Giulia and the Giulia Ti the exterior appearance of the Quadrifoglio model. Ti versions with the Sport package also get Quadrifoglio-style upgrades to the interior and offer an optional limited-slip differential and three-mode adaptive dampers.

We had less than an hour or so with the four-cylinder Giulia, but in that short amount of time, it made us believe that it will be a compelling choice in its crowded segment. Buying a first-year Italian car built in a new plant does sound like a gamble, considering Alfa's on-again, off-again history and the brand's reputation for poor quality here in the States. We hope the Giulia's bona fide Italianate experience won't extend to owners becoming overly familiar with the espresso machine in the dealer's service department. But at least the Giulia has prescription-strength Italian-ness right where you want it: at your fingertips and under the hood.

TESTED

A Boost for the Soul

More performance and better value, same great Kia **Soul**. _by Joseph Capparella

THE KIA SOUL TURBO is dressed for the job it wants, not the job it has. With its flat-bottomed steering wheel, bits of red exterior trim, and dual exhaust tips, the boosted Soul may evoke notions of the Volkswagen GTI. In reality, it is simply a slightly more powerful version of Kia's successful little lunchbox. Kia is keen to avoid any such disadvantageous comparisons by resolutely assuring us that the blown Soul is not a hot hatch but a sporty small crossover—which may be splitting hairs.

Rather than give the Soul a wholesale performance makeover, Kia simply slotted in a 201-hp, turbocharged 1.6-liter four-cylinder. With the exception of slightly larger front brakes and marginally stiffer damping, the turbo model has a chassis setup that's nearly identical to other Souls. The engine routes power exclusively through a seven-speed dual-clutch transmission. No manual is offered, further proof of its more mainstream mission. If you want a manual transmission with this engine, Kia will happily steer you toward the Forte5 SX hatchback with a six-speed stick.

[+] Snappy powertrain, solid interior packaging, satisfying value.
[–] Indifferent steering, no manual transmission, lack of paddle shifters.

Kia's insistence on categorizing the Soul with crossovers from Nissan and Mazda has clear benefits: Its performance numbers put it near the top of that class, whereas it clearly lags behind the hot-hatch elite. Even so, turbocharging shaves 2.0 seconds from the Soul's zero-to-60-mph time and 1.6 seconds from its quarter-mile run. Hitting the 60-mph milestone in 6.5 seconds makes it quicker than the Honda HR-V, Mazda CX-3, and even the Nissan Juke NISMO.

This is a happy and smooth engine, with mostly linear power delivery and strong midrange torque, and the dual-clutch automatic transmission delivers quick shifts and minimal low-speed clunkiness. Paddle shifters are notably absent, although the shifter does have a manual gate. We preferred driving in sport mode, which wakes up the car a bit by adjusting the throttle response and transmission shift points to reduce the sensation of turbo lag.

Sport mode also makes the steering heavier, but it can't help the electrically assisted steering rack's lack of feedback and on-center feel. Even so, the Soul's stiff structure and damping make for a decent ride-handling balance. Body roll is nicely controlled, and there's a commendable lack of torque steer.

Regardless of category, the squared-off Soul shames most subcompact crossovers and small hatchbacks in terms of practicality and interior space. The cabin is relatively richly trimmed, airy, and spacious, with good sightlines all around, an expansive rear seat with plenty of headroom, and a large cargo area.

Pricing is another strong suit. The Turbo starts at $23,500, just $1350 more than last year's 164-hp Soul model, and it even gets better fuel economy than the less expensive and less powerful naturally aspirated models. It should be an easy upsell. Time to stop trying to categorize the Soul and appreciate it for what it is: a practical and attractive box that's no longer slow.

dancing hamster report

SOUL SELLING

Even before the new turbocharged model went on sale in November, the Soul racked up more sales in 2016 than any other Kia and dominated the class of so-called "subcompact crossovers" through October. The fact that the Kia manages to fly off dealer lots without an all-wheel-drive option makes its success all the more impressive.

- Kia Soul: 120,859
- Jeep Renegade: 84,494
- Honda HR-V: 64,866
- Buick Encore: 63,648
- Chevrolet Trax: 62,802
- Nissan Juke: 17,072
- Mazda CX-3: 15,556
- Fiat 500X: 10,047

2017 KIA SOUL TURBO

VEHICLE TYPE: front-engine, front-wheel-drive, 5-passenger, 4-door hatchback
PRICE AS TESTED: $27,620
BASE PRICE: $23,500
ENGINE TYPE: turbocharged DOHC 16-valve inline-4, aluminum block and head, direct fuel injection
DISPLACEMENT: 97 cu in, 1591 cc
POWER: 201 hp @ 6000 rpm
TORQUE: 195 lb-ft @ 1500 rpm
TRANSMISSION: 7-speed dual-clutch automatic with manual shifting mode

DIMENSIONS

WHEELBASE: 101.2 in
LENGTH: 163.0 in
WIDTH: 70.9 in
HEIGHT: 63.5 in
PASSENGER VOLUME: 97 cu ft
CARGO VOLUME: 19 cu ft
CURB WEIGHT: 3202 lb

C/D TEST RESULTS

ZERO TO 60 MPH: 6.5 sec
ZERO TO 100 MPH: 18.2 sec
ZERO TO 120 MPH: 34.0 sec
ROLLING START, 5–60 MPH: 6.8 sec
1/4-MILE: 15.1 sec @ 93 mph
TOP SPEED: 124 mph (mfr's claim)
BRAKING, 70–0 MPH: 169 ft
ROADHOLDING, 300-FT-DIA SKIDPAD: 0.81 g*

FUEL ECONOMY

EPA COMBINED/CITY/HWY: 28/26/31 mpg
***C/D* OBSERVED:** 24 mpg

**Stability-control-inhibited.*

Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

Drivelines

photography by MARC URBANO

JOIN THE CRUSADE TO

SAVE THE MANUALS

The manual gearbox and ability to drive it are endangered. Driving enthusiasts of the world unite!

SHOP THE COLLECTION ONLY AT **SHOPCARANDDRIVER.COM**

FREE SHIPPING
PROMO CODE: STM2016
($30 minimum purchase)

CAR AND DRIVER

THE BEST PURE COTTON NON-IRON DRESS SHIRT BAR NONE.

UNBEATABLE INTRODUCTORY OFFER **$24.95**
REG $89.50
YOU SAVE 70%

PLUS,
FREE MONOGRAMMING
REG $10.95
ADD THIS TIE FOR JUST $19.95
REG $72.50

PAULFREDRICK.COM/SPECIAL • 800.309.6000 PROMO CODE T7RSCD

WHITE 100% COTTON PINPOINT / NEAT WRINKLE-FREE WEAR / EASY NON-IRON CARE
4 COLLAR STYLES / BUTTON OR FRENCH CUFF / REGULAR, BIG & TALL & SLIM FIT

GUARANTEED PERFECT FIT.
Free Exchanges. Easy Returns. New customer offer.
Limit 4 shirts. Imported. Shipping extra. Expires 3/31/17.

Paul Fredrick

Iconic Cars

The experts at **Car and Driver**, who have tested every version of the **Corvette** and every model of **Porsche**, have created two stunning retrospectives celebrating the **past and present** of these incredible cars. Featuring sensational photography throughout.

AVAILABLE AS E-BOOKS

To download, visit
www.rosettabooks.com/iconic-cars-ebooks

CAR AND DRIVER RosettaBooks

TESTED

Haymaker

Mercedes-AMG lands a solid punch with the new-for-2017 **GLC43** crossover. _by Mike Sutton

[+] Potent twin-turbo V-6, attractive price, properly sporty and luxurious.
[–] Second-tier AMG status, a Porsche Macan is still a better driver.

COUPLE THE FUNGAL BLOOM of crossovers with the spread of Mercedes-AMG's welterweight "43" model designation, and the fortified GLC43 compact luxo-ute seemed inevitable. With it, the AMG folks in Affalterbach painted a bull's-eye on the back of Porsche's Macan GTS, offering a slightly softer bearing than the Macan's but in a very harmonious package nevertheless.

A stilted-wagon derivative of the C-class sedan and coupe, the base GLC300 is a lovely if sober mall runner powered by a 241-hp, turbocharged 2.0-liter four-cylinder. The step up to the GLC43 runs $13,750 but adds a gutsy twin-turbo 3.0-liter V-6 and assorted hardware that dramatically alter the GLC's performance and character. Mercedes also throws in subtly pumped-up fascias, AMG instruments, red seatbelts, and lots of red contrast stitching. While the V-6 is not one of AMG's hand-built jobs, it offers a raspy growl and prompt delivery of its 362 horsepower and 384 pound-feet of torque.

AMG has massaged the GLC's nine-speed automatic and 4MATIC all-wheel drive for high-performance duty, the latter with a greater rear-biased torque split (31/69 front to rear, versus 45/55 in the GLC300). While Porsche's dual-clutch PDK is still aces for an autobox, the AMG transmission deftly rifles through its ratios, tightening shifts and aggressively downshifting as the driver switches from the standard comfort driving mode to either sport or sport-plus.

Although the GLC43 carries 236 less pounds than the 360-hp Macan GTS, its lack of a launch-control system limited the 4256-pound Mercedes to a 4.5-second run to 60 mph and a quarter-mile pass of 13.1 seconds at 105 mph—properly rapid for this class but trailing the Porsche by a tenth of a second on both counts. The EPA's combined fuel-economy rating for the AMG mirrors the mechanically identical (but pricier) GLC43 coupe's 20 mpg, 3 mpg greater than our test car's observed fuel economy.

362 HP
The GLC43's 3.0-liter V-6 may not be one of Affalterbach's one-man-one-engine powerhouses, but it radically transforms the tame GLC crossover.

The Mercedes is slightly softer and more capacious than the Macan but moves with nearly the same fluidity, unknown to lesser crossovers. The GLC43 shines on balance, its helm precise and tactile for an SUV, thanks in part to a front axle beefed up from the GLC300 with increased negative camber. The adjustable AMG air-sprung suspension affords excellent agility over challenging roads, yet the chassis cushions occupants in ways the stiffer Porsche simply cannot, even when the AMG is sitting on its optional 21-inch wheels shod with 255/40 front and 285/35 rear Continental ContiSportContact 5P summer tires (20s with all-seasons are standard).

The sticky rubber helped the comfier Mercedes-AMG obliterate the Macan's skidpad figure (0.94 g to 0.88), and its front brakes, upgraded from the standard GLC with 14.2-inch front rotors, returned a marginally shorter 154-foot stop from 70 mph.

While the AMG GLC isn't cheap—with its starting price of $55,825—and while it's not as focused as the Porsche at the limit, that amount of coin will only get you a 340-hp Macan S, with the Macan GTS demanding 12 grand more still. Even with our test car's $8680 in optional wheels, leather, lights, navigation, and more, it's an attractive proposition. Add in its eager attitude and a beautiful interior shared with the C-class, including an adult-friendly back seat, and AMG's GLC43 is a formidable contender.

2017 MERCEDES-AMG GLC43

VEHICLE TYPE: front-engine, all-wheel-drive, 5-passenger, 4-door hatchback
PRICE AS TESTED: $64,505
BASE PRICE: $55,825
ENGINE TYPE: twin-turbocharged DOHC 24-valve V-6, aluminum block and heads, direct fuel injection
DISPLACEMENT: 183 cu in, 2996 cc
POWER: 362 hp @ 5500 rpm
TORQUE: 384 lb-ft @ 2500 rpm
TRANSMISSION: 9-speed automatic with manual shifting mode

DIMENSIONS
WHEELBASE: 113.1 in
LENGTH: 183.5 in
WIDTH: 76.0 in
HEIGHT: 64.1 in
PASSENGER VOLUME: 98 cu ft
CARGO VOLUME: 19 cu ft
CURB WEIGHT: 4256 lb

C/D TEST RESULTS

ZERO TO 60 MPH: 4.5 sec
ZERO TO 100 MPH: 11.7 sec
ZERO TO 130 MPH: 22.7 sec
ROLLING START, 5–60 MPH: 5.3 sec
1/4-MILE: 13.1 sec @ 105 mph
TOP SPEED: 133 mph (governor limited)
BRAKING, 70–0 MPH: 154 ft
ROADHOLDING, 300-FT-DIA SKIDPAD: 0.94 g*

FUEL ECONOMY
EPA COMBINED/CITY/HWY: 20/18/24 mpg
***C/D* OBSERVED:** 17 mpg

**Stability-control-inhibited.*

Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

Drivelines

photography by MICHAEL SIMARI

WELCOME HOME THE BRAVE

Put their warrior experience to work for your company.
Contact us at: findwwp.org

WOUNDED WARRIOR PROJECT®

DUTY ★ HONOR ★ COURAGE ★ COMMITMENT ★ INTEGRITY ★ COUNTRY ★ SERVICE

©2016 Wounded Warrior Project, Inc. All Rights Reserved.

BMW & MINI parts

- Free shipping over $150 (most orders)
- Free DIY video guides
- Free color catalog

BAVARIAN® autosport

BMW since 1974. MINI since 2002.

800.535.2002 | BAVauto.com

✓Yes

✓Yes

xNo

✓Yes

✓Yes

✓Yes

✓Reliably Low Prices
✓Easy To Use Website
✓Huge Selection
✓Fast Shipping
www.rockauto.com

ROCKAUTO.COM
ALL THE PARTS YOUR CAR WILL EVER NEED®

Wear Your Flare

Honda gets its ducts in a row with the **Civic hatchback**. _by Aaron Robinson

CIVICS USED TO COME in a lot of different shapes and sizes, from the stubby little CRX to a tall, four-wheel-drive wagon. But long ago, the funneling effects of mainstream consumer tastes (a fancy way of saying that we are all sheep) caused Honda to pare down the Civic line to its two best-sellers, the sedan and coupe. America even got its own Civic platform, while Europe and other overseas markets continued to enjoy a hatchback body style, which was last seen around these parts as the 2002–2005 British-built Si hatch.

Well that Anglo-American pipeline is back in business, as Honda's Swindon, England, assembly plant once again swings into action to produce a Civic hatchback for America. The return of the hatch as a younger, sportier, and more male-oriented alternative to the sedan and coupe was made possible by last year's introduction of a common Civic platform for all markets. Now that there is One Civic to Unite Us All, Honda can much more cheaply bring less-popular variants to the U.S.

Here, the hatchback, which carries a roughly $500-and-up premium over the sedan, is being plugged into the compact segment as a way to grow incremental volume and possibly stanch the outflow of compact-sedan buyers to crossovers. Also, Honda finally sees some movement in America's long-dormant love of hatchbacks and is hoping for 40,000 to 50,000 sales per year, a number that would give total Civic volume a healthy bump indeed, assuming they aren't all robbed from the existing Civic buyer pool.

This is not the return of the CVCC, or any of the other thrifty hatchback versions of the Civic that have come here over the past four decades. Along the lines of the Mazda 3 and Ford Focus hatchbacks, the new Civic hatch is basically a sedan with a garage door in back. Except for the roof, rear doors, and rear quarter-panels, all the outer sheetmetal is common with the sedan. The structure was strengthened considerably in back around the large hatch hole to keep things rigid, but the wheelbase and width are identical and the overall length shrinks by just 4.3 inches.

[+] Tenacious G, great transitional behavior, refined powertrain. [–] Can only get the manual transmission in poverty spec, is this really what bros are after?

Besides the lack of a trunk, the hatch can be identified by the Goth-black face paint and gaping faux ducts in the bumpers. As we said, it's supposed to appeal to youth, who, apparently, want to be seen as having a lot of hot gas to expel. The hatchback arrives on two trim-level tracks: the mainstream LX, EX, and EX-L with navigation, and the sportier Sport and Sport Touring, which have red-illuminated gauges instead of blue ones, plus faux-carbon trim,

aluminum pedals, and leather shifter and steering-wheel wraps.

Honda's new and increasingly ubiquitous direct-injected turbo 1.5-liter (it's in the new CR-V, too, and odds are the Accord will soon have it) is the sole engine available, but the horsepower output rises from 174 in the mainstream models to 180 in the Sport and Sport Touring versions. A six-speed manual can be ordered to sub in for the CVT, but only on the base LX and Sport. Once again, as with the sedan and the Accord, Honda punishes you for wanting a manual by locking out access to the upper trim-level features such as navigation and the Honda Sensing suite of electronic safety aids.

The Sport with a six-speed is a pleasure to drive, the 1.5-liter making strong torque across the rev range (rated peak torque in the manual is slightly higher, up from 162 pound-feet to 177). The requisite lag and drop-off of an engine pressurized to 16.5 psi have been earnestly if not perfectly smoothed over, and the car goes like a dart.

The Civic hatch has a fantastically cogent interior layout (above), and a fantastically demented exterior design. Hey, at least Honda is trying.

If you want, you can be the fastest car on the freeway, as long as everyone else is in ordinary cars; and where the road turns, the Civic likes to play. The grip is tenacious, the brakes are stout, and the body motions are well damped, just as you'd find in a Civic sedan or an Accord. The largest wheels you can get are the Sport and Sport Touring's 18s, with 235/40 Continental ContiProContact tires, neither the fanciest gums nor the cheapest donuts, but a solid tire for the hatchback's modest price point. The sportier tires generate some noise, but for this class of car, it's not excessive.

This being basically a Civic sedan, the controls have the usual Honda delight in their weight and precision, and the gearshifter, if not quite S2000 quality, slips tightly from gate to gate with a gratifying feel. Opt for the CVT, and it behaves more or less like a conventional step-gear transmission, executing "shifts" between seemingly fixed ratios. It's all a pantomime, but it eliminates the complaint that CVTs make the engine drone endlessly. Most owners will have no clue that it's a CVT, which is surely Honda's intention.

The hatchback opens wide and the cargo area is reasonably deep, even with the rear seats up, creating just under 26 cubic feet in the luxury trims and 23 cubic feet in the Sport trims. That's a bit more than the more wagon-y–looking Mazda 3. Fold down the Civic's rear seats, and all trim levels give you 46 cubic feet, about the same as the Mazda, which is, let's face it, the car you're most likely to shop the Civic hatch against. One novel Civic feature is the side roll-up cargo cover, which comes out of a scroll that can be mounted to the left or right side of the cargo area, per your preference.

Prices range from $20,535 for the LX to $26,135 for the EX-L with navigation; the Sport starts at $22,135, and the loaded Sport Touring will notch up to just over $29,000. The prices closely track those of the more established—and much prettier—Mazda 3 hatch, undoubtedly not by accident.

Honda's idea of what dudes want in their styling may be a little overwrought to some. The current Mazda 3 is swoopy elegance that strikes us as exhibiting what Honda used to have: confidence. Still, despite the unnecessary race-boy theater, the Civic hatchback has the goods and will match up well against the Mazda, one of our favorite compacts. That's as good for us as it is for the Civic, and for Honda.

2017 HONDA CIVIC HATCHBACK

VEHICLE TYPE: front-engine, front-wheel-drive, 5-passenger, 4-door hatchback
BASE PRICE: $20,535–$29,135
ENGINE TYPE: turbocharged and intercooled DOHC 16-valve inline-4, aluminum block and head, direct fuel injection
DISPLACEMENT: 91 cu in, 1496 cc
POWER: 174 or 180 hp @ 5500 or 6000 rpm
TORQUE: 162 lb-ft @ 1700 rpm or 167 lb-ft @ 1800 rpm or 177 lb-ft @ 1900 rpm
TRANSMISSIONS: 6-speed manual, continuously variable automatic with manual shifting mode

DIMENSIONS
WHEELBASE: 106.3 in
LENGTH: 177.9 in
WIDTH: 70.8 in
HEIGHT: 56.3–56.5 in
PASSENGER VOLUME: 95–97 cu ft
CARGO VOLUME: 23–26 cu ft
CURB WEIGHT: 2900–3000 lb

PERFORMANCE (*C/D* EST)
ZERO TO 60 MPH: 6.4–6.9 sec
ZERO TO 100 MPH: 17.0–17.5 sec
1/4-MILE: 15.0–15.3 sec
TOP SPEED: 125 mph

FUEL ECONOMY
EPA COMBINED/CITY/HWY: 32–34/30–31/36–40 mpg

HARBOR FREIGHT
QUALITY TOOLS AT RIDICULOUSLY LOW PRICES

PITTSBURGH AUTOMOTIVE
- Includes Ram, Hook and Chain

1 TON CAPACITY FOLDABLE SHOP CRANE
ITEM 69445/61858/69512 shown

SAVE $169
SUPER COUPON $99.99
Customer Rating
~~$179.99~~ comp at $269
76319447

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

VALID NOW ON 5,000+ ITEMS
20% OFF
ANY SINGLE ITEM

Limit 1 coupon per customer per day. Save 20% on any 1 item purchased. *Cannot be used with other discount, coupon or any of the following items or brands: Inside Track Club membership, Extended Service Plan, gift card, open box item, 3 day Parking Lot Sale item, automotive lifts, compressors, floor jacks, saw mills, storage cabinets, chests or carts, trailers, trenchers, welders, Admiral, Badland, Bauer, Bremen, CoverPro, Creekstone, Daytona, Diablo, Doyle, Drummond, Earthquake, Franklin, Hercules, Holt, Jupiter, Lynxx, Maddox, Portland, Predator, Quinn, StormCat, Tailgator, Union, Viking, Vulcan. Not valid on prior purchases. Non-transferable. Original coupon must be presented. Valid through 5/3/17.
76292927

PITTSBURGH AUTOMOTIVE
#1 SELLING JACKS IN AMERICA

RAPID PUMP® 1.5 TON ALUMINUM RACING JACK
- 3-1/2 Pumps Lifts Most Vehicles
- Weighs 34 lbs.

ITEM 69252/62160/62496
62516/68053/60569 shown

SAVE $60
Customer Rating
SUPER COUPON $59.99
~~$89.99~~ comp at $119.99
76320028

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CHICAGO ELECTRIC POWER TOOLS
1/2" ELECTRIC IMPACT WRENCH
ITEM 69606/61173
68099 shown

SAVE $109
SUPER COUPON $39.99
Customer Rating
~~$49.99~~ comp at $149.88
76275881

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH AUTOMOTIVE
VEHICLE POSITIONING WHEEL DOLLY
Customer Rating
NEW

- 1250 lb. capacity

SAVE $72
SUPER COUPON $69.99
ITEM 62234
61917 shown
~~$99.99~~ comp at $142.97
76331925

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PREDATOR GENERATORS
4000 PEAK/3200 RUNNING WATTS 6.5 HP (212 CC) GAS GENERATORS

SAVE $179
Customer Rating
ITEM 69676/69729
63080/63079 shown
ITEM 69675/69728
63090/63089 CALIFORNIA ONLY
- 70 dB noise level

Wheel kit sold separately.

SUPER COUPON $289.99
~~$339.99~~ comp at $469
76288517

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

US GENERAL PRO
SUPER COUPON
30", 5 DRAWER TOOL CART
Customer Rating
ITEM 69397/61427
63308/95272 shown

SUPER COUPON $164.99
~~$189.99~~ comp at $399.99
SAVE $235
- 704 lb. capacity

76333346

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

HARDY
SUPER COUPON
MECHANIC'S GLOVES

SIZE	ITEM
MED	62434/62426
LG	62433/62428
X-LG	62432/62429

NEW
SAVE 73%
YOUR CHOICE $3.99
Item 62429 shown
Customer Rating
~~$5.99~~ comp at $14.97
76309122

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

BADLAND BATTLE TESTED
12,000 LB. ELECTRIC WINCH WITH REMOTE CONTROL AND AUTOMATIC BRAKE
ITEM 61256/61889
60813 shown

SAVE $453
SUPER COUPON $299.99
Customer Rating
~~$399.99~~ comp at $752.99
76292568

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH
SUPER COUPON
32 PIECE SCREWDRIVER SET
ITEM 61259
90764 shown

SAVE 59%
Customer Rating
YOUR CHOICE $5.99
~~$8.99~~ comp at $14.88
76313015

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

drill master
18 VOLT CORDLESS 3/8" DRILL/DRIVER AND FLASHLIGHT KIT
Customer Rating

SAVE $79
SUPER COUPON $19.99
Includes one 18V NiCd battery and charger.
ITEM 68287 shown
69652/62872/62869
~~$24.99~~ comp at $99
76313493

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH AUTOMOTIVE
5 PIECE AUTO TRIM AND MOLDING TOOL SET
ITEM 67021

SUPER COUPON $5.99
Customer Rating
SAVE 66%
~~$8.99~~ comp at $17.99
76310906

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CENTRALPNEUMATIC
HIGH SPEED METAL SAW

SAVE 74%
SUPER COUPON $12.99
ITEM 60568/62541
91753 shown
~~$18.99~~ comp at $49.99
76297871

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

SUPER COUPON
MECHANIC'S SHOP TOWELS PACK OF 50
ITEM 69649
61878/61837
46163 shown

SUPER COUPON $9.99
Customer Rating
SAVE 47%
~~$12.99~~ comp at $18.98
76303409

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CHICAGO ELECTRIC POWER TOOLS
10" SLIDING COMPOUND MITER SAW
Customer Rating
ITEM 61971/61972
98199 shown

SAVE $114
SUPER COUPON $84.99
~~$119.99~~ comp at $199
76294085

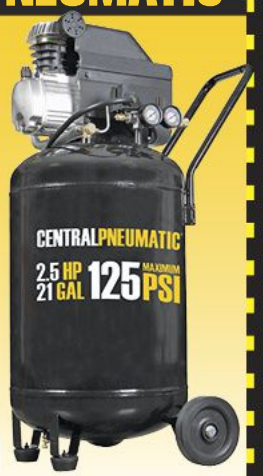
LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CENTRALPNEUMATIC
20 OZ. GRAVITY FEED SPRAY GUN
ITEM 47016 shown
67181/62300

SAVE 79%
SUPER COUPON $9.99
Customer Rating
comp at $49
76303366

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

HARBOR FREIGHT
QUALITY TOOLS AT RIDICULOUSLY LOW PRICES

CENTRALPNEUMATIC®
2.5 HP, 21 GALLON
125 PSI VERTICAL
AIR COMPRESSOR
ITEM 69091/67847 shown
61454/61693/62803
Customer Rating
SAVE $347
SUPER COUPON
$149.99
$179.99 comp at $497


76408801
LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

SUPER COUPON
FREE
1" x 25 FT. TAPE MEASURE
PITTSBURGH
WITH ANY PURCHASE
$4.97 VALUE

ITEM 69030/69031 shown
76405700
LIMIT 1 - Cannot be used with other discount, coupon or prior purchase. Coupon good at our stores, HarborFreight.com or by calling 800-423-2567. Offer good while supplies last. Shipping & Handling charges may apply if not picked up in-store. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one FREE GIFT coupon per customer per day.

PITTSBURGH AUTOMOTIVE
Customer Rating
3 TON HEAVY DUTY STEEL JACK STANDS
ITEM 61196/69597
38846 shown
SAVE 42%
SUPER COUPON $19.99

$24.99 comp at $34.99
76424346
LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH SUPER COUPON
TORQUE WRENCHES
Customer Rating
Item 239 shown

DRIVE	ITEM
1/4"	2696/61277
3/8"	807/61276
1/2"	62431/239

YOUR CHOICE $9.99
• Accuracy within ±4%
SAVE 66%

$21.99 comp at $29.99
76385093
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

HaulMaster
72" x 80" MOVING BLANKET
ITEM 66537 shown
69505/62418

SAVE 66%
SUPER COUPON $5.99
Customer Rating
$8.99 comp at $17.97
76356477
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CENTRAL MACHINERY SUPER COUPON
12 TON SHOP PRESS
ITEM 33497
60604 shown
• Pair of arbor plates included
Customer Rating
SAVE $79

SUPER COUPON $99.99
$134.99 comp at $179
76400020
LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

HaulMaster
Customer Rating
MOVER'S DOLLY
ITEM 60497/93888 shown
61899/62399/63095/63096
63098/63097

SUPER COUPON $7.99
• 1000 lb. capacity
SAVE 59%
$10.99 comp at $19.97
76368737
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CEN-TECH SUPER COUPON
SAVE 57%
12 VOLT, 10/2/50 AMP BATTERY CHARGER/ ENGINE STARTER
SUPER COUPON $29.99

$49.99 comp at $69.99
ITEM 62334/60581/60653 shown
76390081
LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH SUPER COUPON
6" DIGITAL CALIPER
ITEM 61585/62387
47257 shown
SUPER COUPON $9.99

• SAE and metric
SAVE 66%
Customer Rating
Includes two 1.5V SR44 button cell batteries.
$17.99 comp at $29.99
76399408
LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

US GENERAL SUPER COUPON
44", 13 DRAWER INDUSTRIAL QUALITY ROLLER CABINET

SAVE $680
SUPER COUPON $349.99
Customer Rating
ITEM 69387
63271/62744
68784 shown
$379.99 comp at $1029.99
76334890
LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH AUTOMOTIVE
Customer Rating
LOW-PROFILE CREEPER
ITEM 69094/61916
2745 shown
SAVE 75%

SUPER COUPON $19.99
$27.99 comp at $79.99
Tools sold separately.
• 300 lb. capacity
76383307
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

COVERPRO SUPER COUPON
10 FT. x 17 FT. PORTABLE GARAGE
SUPER COUPON $179.99

$199.99 comp at $326.55
NEW
ITEM 62859/63055
62860 shown
SAVE $146
Customer Rating
76415453
LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

PITTSBURGH AUTOMOTIVE
PNEUMATIC ADJUSTABLE ROLLER SEAT
Customer Rating
SAVE 50%
ITEM 61160
63456/61896
46319 shown
SUPER COUPON $19.99

• 300 lb. capacity
$27.99 comp at $39.99
76419578
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

CHICAGO ELECTRIC WELDING
SAVE $50
90 AMP FLUX CORED WELDER
ITEM 61849/62719
68887 shown
SUPER COUPON $99.99

• No Gas Required
Customer Rating
$109.99 comp at $149.99
76410351
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

SUPER COUPON
NEW
EMERGENCY 39 LED TRIANGLE WORKLIGHT
ITEM 62574
62158 shown
62417
SUPER COUPON $2.99

SAVE 76%
Customer Rating
Batteries included.
$3.99 comp at $12.80
76422240
LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

drillmaster
4-1/2" ANGLE GRINDER
Customer Rating

SUPER COUPON $9.99
SAVE 50%
ITEM 60625 shown
95578/69645
$14.99 comp at $20.26
76334268
LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/3/17. Limit one coupon per customer per day.

At Harbor Freight Tools, the "comp at" price means that the same item or a similar functioning item was advertised for sale at or above the "comp at" price by another retailer in the U.S. within the past 180 days. Prices advertised by others may vary by location. No other meaning of "comp at" should be implied. For more information, go to HarborFreight.com or see store associate.

TESTED

Big T, No S

Even in base trim, the **2017 911 Turbo** is stupid fast. _by Tony Quiroga

WHAT CAN YOU SAY about a car that hits 60 mph in 2.6 seconds? That it's quick, and that quick is beautiful. From the high perch of a crossover, the Turbo might look like a thousand other 911s, but that's because the reactor core behind the rear wheels can't be seen from above. We'd call that inner beauty, and isn't that what's important?

At the heart of this love affair is a twin-turbocharged flat-six that ingests enough gas and air to provide 540 horsepower and 523 pound-feet of torque. That's a meaningful 20 more horses than last year's Turbo and a remarkable 142 horsepower per liter, improvements that come from increases in boost and fuel-injection pressures. If that's not enough, Porsche offers the 580-hp Turbo S, though it's no quicker to 60 mph and costs $28,900 more.

[+] An incredible mix of performance and usability, never annoying, as quick as the Turbo S to 60, beauty beyond the sheetmetal. [–] Blends into the scenery too much for extroverts, 50 percent more money than a Carrera S, marginally quicker beyond 100 mph.

Boost from the variable-vane turbos builds so fast that the Turbo has the kind of instant thrust we now associate with Tesla's powerful electric motors. While some of the shove is due to the clever turbos, some of it is due to the Dynamic Boost function that keeps the throttle open, the turbos spinning, and the engine stuffed with boost even when the driver lifts off the throttle. The system cuts fuel, but the turbos continue to move air into the engine in preparation for when the driver gets back on the gas. It works like magic, because this Turbo never leaves you waiting.

So what if all 911 models have turbochargers now? The Turbo designation might sound as if it's on its way to becoming an ultra-luxury trim level in the Mercedes-Maybach vein, but we can assure you that it's not. The 911 Turbo has always flirted with decadence by offering everything wrapped in hides, and this Turbo's bovine- and Alcantara-draped interior continues in that tradition. But the new Turbo convincingly posits that sports-car decadence should really be measured by performance. In that regard, the Turbo's quarter-mile time of 10.7 seconds at 129 mph is right up there on the excess meter with the optional $1200 leather-covered air-vent slats.

On a track, the Turbo claws its Pirelli P Zeros into the tarmac. Effusive feedback comes through the steering, and the car remains flat even without the optional active anti-roll bars. Rounding the skidpad, the Turbo posts 1.02 g's relatively easily. The wide P Zeros in back and the standard four-wheel steering conspire to hide the fact that 62 percent of the Turbo's 3656 pounds sits over the rear wheels.

Some of the credit for the Turbo's high-speed stability does have to go to the wing, vents, and active aerodynamics that distinguish it from lesser 911s. But even with its many special design elements, the Turbo at the as-tested price of $167,225 lacks the colorful exterior of the mid-engined peacocks with which it competes. Those competitors include hustlers such as the Audi R8 and McLaren's 570S and 570GT. Those cars get noticed; a 911 just gets you places quickly. But as a car you might drive daily, its relative anonymity is an advantage.

Also consider: Exotics fall out of fashion as soon as the next model drops. Judging by the obscene prices early 911 Turbos sell for today, a Turbo's inner beauty never fades.

performance peek

LAUNCH BREAK

The 911 Turbo's astonishing launch-control system makes acceleration testing easy—just pin the brake, wood the throttle, and release the brake. While testing this Turbo, we discovered that launch control now has two modes. With sport or sport-plus selected, the engine will rev to 5600 rpm before engaging a clutch and bolting off to a 1.0-second run to 30 mph and a 2.6-second zero-to-60 time. Left in normal mode, the engine revs to a more sedate 4400 rpm before engaging a clutch. We tested both and found that the lower-rpm launch adds 0.2 second to the 30-mph time and results in a 2.9-second zero-to-60-mph sprint, 0.3 second behind the more brutal launch. So, even if you forget to switch to sport or sport-plus, the Turbo is still quicker than nearly everything this side of a Veyron.

2017 PORSCHE 911 TURBO

VEHICLE TYPE: rear-engine, all-wheel-drive, 2+2-passenger, 2-door coupe
PRICE AS TESTED: $167,225
BASE PRICE: $160,250
ENGINE TYPE: twin-turbocharged DOHC flat-6, aluminum block and heads, direct fuel injection
DISPLACEMENT: 232 cu in, 3800 cc
POWER: 540 hp @ 6400 rpm
TORQUE: 523 lb-ft @ 2250 rpm
TRANSMISSION: 7-speed dual-clutch automatic with manual shifting mode
DIMENSIONS
WHEELBASE: 96.5 in
LENGTH: 177.4 in
WIDTH: 74.0 in
HEIGHT: 51.1 in
PASSENGER VOLUME: 70 cu ft
TRUNK VOLUME: 4 cu ft
CURB WEIGHT: 3656 lb

C/D TEST RESULTS

ZERO TO 60 MPH: 2.6 sec
ZERO TO 100 MPH: 6.3 sec
ZERO TO 170 MPH: 23.1 sec
ROLLING START, 5–60 MPH: 3.5 sec
1/4-MILE: 10.7 sec @ 129 mph
TOP SPEED: 198 mph (drag limited, mfr's claim)
BRAKING, 70–0 MPH: 143 ft
ROADHOLDING, 300-FT-DIA SKIDPAD: 1.02 g
FUEL ECONOMY
EPA COMBINED/CITY/HWY: 21/19/24 mpg
***C/D* OBSERVED:** 17 mpg

Shell V-Power NiTRO+ Premium Gasoline
The Official Fuel of CAR AND DRIVER

Drivelines

photography by SCOTT G. TOEPFER

BRAKEWORLD

GUARANTEED BEST PRICE • LARGEST SELECTION
GUARANTEED FITMENT • ADVICE YOU CAN TRUST

ULTRA HIGH QUALITY ROTORS
- Massive Stopping Power
- Cooler Brakes
- Longer Rotor Life

DISC ITALIA · CHROMEBRAKES · brembo

PERFORMANCE BRAKE PADS
- NO BLACK DUST
- Super Quiet & Clean
- Shorter Stopping Distance
- Longer Pad Life
- Advanced Ceramic & Kevlar Pads

STAINLESS STEEL BRAKE LINES

PROTECTED NANO COATED ROTORS

AVAILABLE IN:
- Chrome
- Black
- Red
- Gold
- Blue

SHOP ONLINE 24/7 WWW.BRAKEWORLD.COM
TOLLFREE: 866.272.5396 WHOLESALE PRICES!!

ADVENTURE TO GO!

Just $349

America's Most Popular Inflatable Kayak!

FREE GROUND SHIPPING to 48 Contiguous US

GO Anywhere, Anytime!
Easy Carry, Easy Paddle!

Packs in a bag!

Paddle wild rivers, remote ponds, secluded bays, scenic lakes...even ocean surf! Sea Eagle 370 Pro Inflatable Kayak Package includes 2 8' paddles, 2 deluxe kayak seats, foot pump & nylon carry bag.

Special Sale - NOW $349 COMPLETE
WITH FREE GROUND SHIPPING
To 48 Contiguous United States

Visit SeaEagle.com to order & for more info
or Call for Catalog 1-800-748-8066

SEA EAGLE.com®
Join us on /SeaEagleBoats
19 N. Columbia St., Dept CA027B Port Jefferson, NY 11777

HONDA / ACURA PARTS SPECIALISTS

GENUINE OEM PARTS

Heeltoe EST. 2002
IN YOUR CORNER

STREET / SPORT UPGRADES
TRACK PERFORMANCE MODS

Supporting all Honda / Acura models celebrating 15 years online

HEELTOEAUTO.COM
949-295-1668

HANDLE YOURSELF WITH CONFIDENCE AND STYLE

ANYWHERE. ANYTIME. WITH ANYONE.

Got a sudden stain on your perfect white dress shirt—just before an important meeting? Need to order a drink for your date? Concerned about how to manscape, buy the perfect gift, leave a dull party gracefully, or navigate the intricacies of any kind of social event? *Esquire's The Biggest Black Book Ever* shows you how to do everything right, in every area of your life.

$24.95 ($27.95 CAN) IN HARDCOVER
HEARST BOOKS

AVAILABLE WHEREVER BOOKS ARE SOLD

PRICE • FREE 2-DAY SHIPPING (CONT'L USA) • SHIPS IN ONE BUSINESS DAY • MIRROR POCKETS • FRONT & REAR REFLECTOR STRIPS • PATENT PENDING DESIGN • FREE FABRIC SAMPLE

MICROBEAD SELECT-FIT AND SELECT-FLEECE CAR COVERS FEATURE PRACTICALLY CUSTOM-FIT FOR LESS THAN HALF THE

TEXT
COVER ME
to 617-657-4212

Get our Microbead cover in 2 days!
Don't wait 10+ days for other brands to make and ship your cover.
We have SELECT-FIT outdoor/indoor and SELECT-FLEECE indoor covers ready now!

GET YOUR COVER IN 2 DAYS & KEEP YOUR CAR CLEAN!

Free 2-Day Shipping Code CD2DAY

GREAT FIT! ★★★★★
—Mercedes-Benz CLA250 owner
—Tesla Model S owner

Outdoor/Indoor SELECT-FIT only $99.95
Indoor SELECT-FLEECE now $139.95
Get both FIT + FLEECE covers for $230.00

MICROBEAD CAR COVERS
MicrobeadCarCovers.com
888-627-1129
*See warranty instructions for complete details

• LIFETIME REPLACEMENT WARRANTY* •

MARKET PLACE.....For advertising information call 212-649-4206, 9am-5pm EST

What I'd Do Differently
A.J. Foyt, 82

He is the only driver to have won the Indy 500 (four times) as well as the Daytona 500, the 24 Hours of Daytona, and the 24 Hours of Le Mans.

► *interview by* JOHN PEARLEY HUFFMAN

C/D: *Do you sleep well the night before a big race?*

AJF: I sleep well. I probably slept better when I was driving than I do now as a team owner not winning any races. I'm not used to running like we've been running the last couple of years.

■ ***Have you ever been scared in a race car?***

☐ I'll tell you, there wasn't a race that went by that I didn't thrill myself one time or another. These people who are "nothing's ever scared me," well, they're full of crap. I've heard that from top-name drivers, and they're just bullshitting themselves. I thrilled the shit out of myself many a time.

■ ***When do you think you peaked as a driver?***

☐ I probably peaked around the middle of the '60s. But '67 was a good year. I hung in there pretty good. In '66 I got burnt, but I came back in '67. Probably '67, I'd say.

■ ***Who is the meanest driver you know?***

☐ A.J. Foyt. If someone ever hit me on purpose, I tried to take them out. You've got to have the will to win. And that's not what people have today. You show me a guy who has never won and is happy, and he doesn't know what winning is like. I guess that's what is hard for me to swallow right now. It's hard to sit back and see yourself get beat. And you try and talk to some of the younger drivers and they kind of look up and . . . well, to hell with them. If you're so goddamn smart, why don't you show me how to win?

■ ***Is it hard to find good people to work for your team today?***

☐ It really is. People don't want to work like the old people. I mean, we might work to two or three in the morning. These people want to come to work at eight and leave at four thirty or five at the latest. Even if you're behind, they still don't want to do nothing. And you pay them about four times the money that you used to. Racing is more like politics today than racing, as far as I'm concerned.

■ ***Why do you think that your generation of drivers was so versatile?***

☐ Well, you tried to race everything just to make a living. These days these guys make so much money just to sit in their car. If Parnelli Jones, Dan Gurney, or I didn't do something, we didn't eat good that night. Today's guys have it all handed to them. It's not like it used to be.

■ ***So, what are your thoughts on Mario Andretti?***

☐ I didn't give a shit about Mario Andretti when I was racing against him.

■ ***Parnelli Jones?***

☐ Parnelli was real tough to race against. Real hard. He ranks right up there in first with Jim Hurtubise in sprint cars.

■ ***How about Mark Donohue?***

☐ Mark was a good racer and a super guy, but I don't think Mark had that killer instinct. Those other two had the killer instinct.

■ ***If you were starting driving today, what would you do?***

☐ Well, the dirt tracks wouldn't do you no good anymore, because the average guy who drives these days doesn't even know what a dirt track is. If you put one of them on a dirt track—half-mile or mile—they'd be lost. I guess if I was going to start, it would be the way most of these guys do. They start in go-karts and go up from there.

■ ***What's the maddest you've ever been during a race?***

☐ Oh, a lot of times I was real mad. But not so mad that I'd be stupid, you know? Most of the guys I raced with knew how I was. We run real hard together.

■ ***What's your favorite type of racing?***

☐ The best racing you can go to is a half-mile dirt track with sprint cars. That's the greatest racing you can do. I call that real racing.

■ ***Is there a number two?***

☐ Well, I'd have to say a midget on half-mile dirt.

■ ***If you could write the rules, what kind of car would IndyCar be running right now?***

☐ I kind of liked it when you could build your own stuff, be your own engineer, and design the car to be whatever you want. But now it's like NASCAR; they've made it spec racing. If you come up with an idea that will make the car faster, it's not allowed. And that to me took a lot of racing out of the game. Nowadays, the rules are so tight, you can't do nothing. I don't know. It's not as much fun as it used to be.

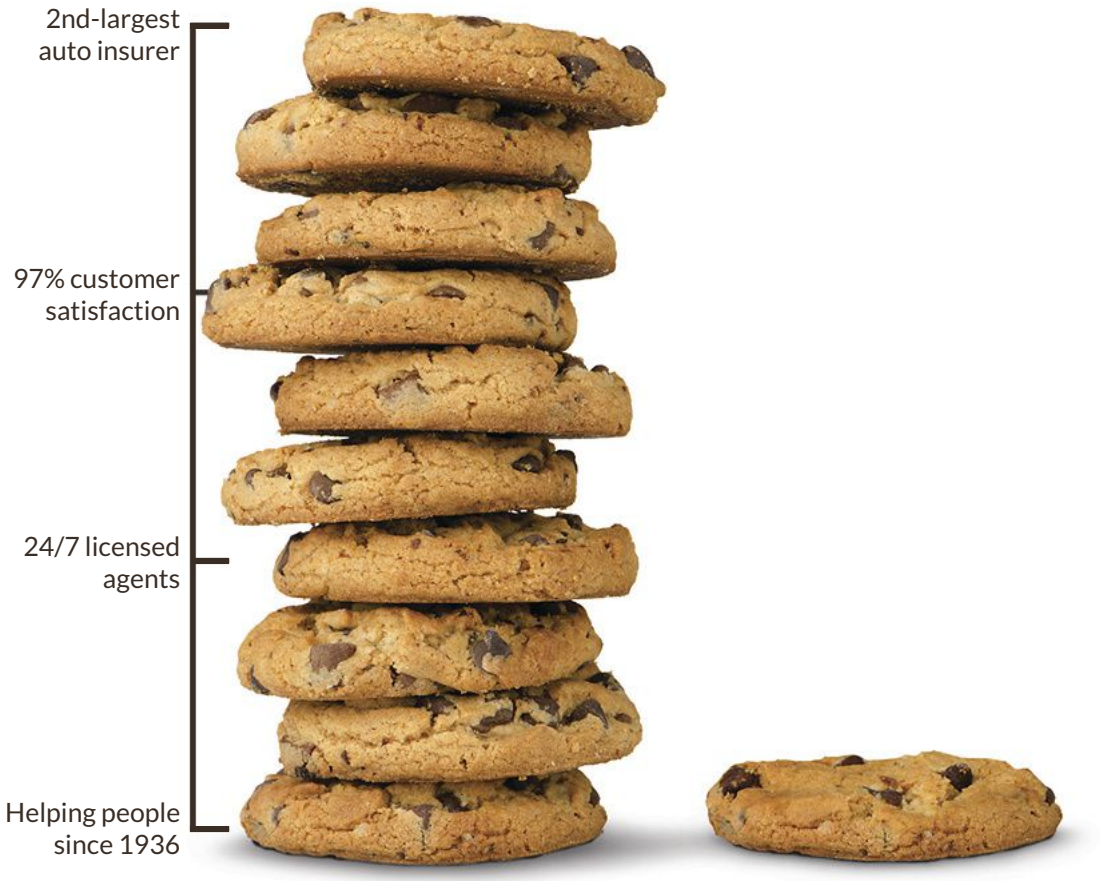
■ ***Looking back, is there anything you would have done differently?***

☐ No. If I was ever reborn, I wouldn't do nothing different. I've had a great life. I come from nowhere, and who'd ever think I'd be the first four-time Indy winner? When I was working in my daddy's shop, I'd listen to Indy every Memorial Day and run my midget at places like Playland Park. My dream was to someday be good enough to go up there and race in it. When I won it the first time, that was just a dream come true.

CUSTOMER SERVICE
Visit service.caranddriver.com or write to Customer Service Department, *Car and Driver*, P.O. Box 37870, Boone, Iowa 50037 for inquiries/requests, changes of mailing and email addresses, subscription orders, payments, etc.

***CAR AND DRIVER*®** (ISSN 0008-6002) VOL. 62, NO. 8, February 2017 is published monthly, 12 times per year, by **Hearst Communications, Inc.**, 300 West 57th Street, New York, NY 10019, U.S.A. Steven R. Swartz, President & Chief Executive Officer; William R. Hearst III, Chairman; Frank A. Bennack, Jr., Executive Vice Chairman; Catherine A. Bostron, Secretary. Hearst Magazines Division: David Carey, President; John A. Rohan, Jr., Senior Vice President, Finance. **© 2017 by Hearst Communications, Inc.** All rights reserved. Trademarks: ***Car and Driver* is a registered trademark of Hearst Communications, Inc.** Periodicals postage paid at New York, NY, and additional mailing offices. Canada Post International Publications mail product (Canadian distribution) sales agreement no. 40012499. Editorial and Advertising Offices: 1585 Eisenhower Place, Ann Arbor, MI 48108. **SUBSCRIPTION PRICES** United States and possessions: $13.00 for one year; Canada, add $10.00; all other countries, add $24.00. **SUBSCRIPTION SERVICES** *Car and Driver* will, upon receipt of a complete subscription order, undertake fulfillment of that order so as to provide the first copy for delivery by the Postal Service or alternate carrier within 4–6 weeks. **MAILING LISTS** From time to time, we make our subscriber list available to companies who sell goods and services by mail that we believe would interest our readers. If you would rather not receive such offers by postal mail, please send your current mailing label or an exact copy to Mail Preference Service, P.O. Box 37870, Boone, IA 50037. You can also visit preferences.hearstmags.com to manage your preferences and opt out of receiving marketing offers by e-mail. *Car and Driver* assumes no responsibility for unsolicited material. None will be returned unless accompanied by a self-addressed stamped envelope. Permissions: Material in this publication may not be reproduced in any form without permission. Back Issues: Back issues are available for purchase in digital format only from your app store of choice. **POSTMASTER** Send all UAA to CFS. (See DMM 507.1.5.2); **NON-POSTAL AND MILITARY FACILITIES** Send address corrections to Car and Driver, P.O. Box 37870, Boone, IA 50037. **Printed in the U.S.A.**

illustration by FLORIAN NICOLLE



The choice is yours, and it's simple.

Why enjoy just one cookie when there's a whole stack in front of you?

The same goes for car insurance. Why go with a company that offers just a low price when GEICO could save you hundreds and give you so much more? You could enjoy satisfying professional service, 24/7, from a company that's made it their business to help people since 1936. This winning combination has helped GEICO to become the 2nd-largest private passenger auto insurer in the nation.

Make the smart choice. Get your free quote from GEICO today.

GEICO®

geico.com | 1-800-947-AUTO | Local Office

Some discounts, coverages, payment plans and features are not available in all states or all GEICO companies. Customer satisfaction based on an independent study conducted by Alan Newman Research, 2015. GEICO is the second-largest private passenger auto insurer in the United States according to the 2014 A.M. Best market share report, published April 2015. GEICO is a registered service mark of Government Employees Insurance Company, Washington, D.C. 20076; a Berkshire Hathaway Inc. subsidiary. © 2016 GEICO

MICHELIN® PILOT® SPORT 4 S,
GENUINE PASSION -
EXCEPTIONAL DRIVES.
SPORT 4 S
MICHELIN
A better way forward
Coming March 2017
For more information visit: michelinman.com